

HWA-BYUNG (ANGER ILLNESS), THE PSYCHOSOCIAL-
NEUROIMMUNOLOGICAL IMPACT OF THE 1992 LOS ANGELES RIOTS
ON KOREAN-AMERICAN VICTIMS

By

JUNA BYUN

A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

1994

Copyright 1994

by

Juna Byun

This dissertation is dedicated to those who were suffered from the
1992 Los Angeles riots and to those who want to understand
the sufferings of the riot victims

ACKNOWLEDGMENTS

Many people and several institutions have participated in the development of this research project. I would first like to thank my committee chairman, Dr. Leslie Sue Lieberman. Her support and guidance have been invaluable and beyond description. Without her outstanding generous assistance combined with comprehensive knowledge and proper judgment regarding my research as a culturally foreign student, I could not have made progress. I would also like to thank my committee members: Dr. Thomas Brown who accepted my peculiar research idea, allowed me to use his laboratory, trained me, and granted my various requests; Dr. Neil Rowland who gave a critical review of my research, supported me when I felt frazzled, and stood by the Korean-American community when the community's identity was threatened; and Dr. Anthony Oliver-Smith and Dr. M. Yasar Iscan who kept at me to finish my dissertation. Thanks also go to Dr. David Chen, for training me in radioimmunoassay in his laboratory, and to Dr. Steven Brandt for his help in computer analysis of my research materials. I extend my thanks to Dr. David Dusek and Mrs. Latha B. Pathangey for their help with the laboratory analysis. I would like to express heartfelt thanks Dr. Michael Phillip (the Associate Dean of Graduate School) who provided me with the Patricia Robert Harris Graduate Minority

Fellowships throughout my doctoral work. Without his ongoing confidence in me even when things went wrong, my graduate work would have fallen apart. This work was also supported by grants from the Gatorade fund of the University of Florida. I would like to thank Dr. Steve Garrisman (the former Chair of Department of Astronomy) who brought my family together in Florida, to my husband Dr. Youngung. Lee (astrophysicist), who always accompanied me in the field to collect data, and my little son, George Lee, who endured more than anyone else, by keeping himself away from me when I was busy doing my research. All of the above is of course, subsumed under the debt which I owe to my mother, my brothers, and sister, who encouraged me to study in the U.S.A. Lastly, I thank my fellows in Chunbuk National University in Korea who supported me in doing this work. I also thank Mr. Richard Smyth (doctoral candidate in the Department of English) for editorial help.

As a native anthropologist, I experienced the same emotional suffering as did the Korean-American victims of the riots. When the emotional burden had become too tremendous to continue my work, I remembered the names of those who encouraged me to do this study. Thus, I especially thank the Korean-American victims who voluntarily participated in this project and shared their suffering with me, a mere student: Dr. B. Yoon (clinical psychologist), Mr. J. Lee (chair of the Association of Korean-American Victims of the L.A. Riots), Mr. B. Oh (treasurer of The Association of The Korean-American Victims of The L.A. Riots), Mr. H. Byun (Chief Editor of the Los Angeles Korea Times), Reverend G. Ba, and Reverend H. Yang, who helped collect the data.

I cannot finish my acknowledgments without a few tears. The past seven years have been a long and lonely journey in a culture whose norms and values are often opposed those of my own. Nevertheless, it was a fruitful journey because of all the people that I have already mentioned who had assisted and encouraged me along the way. I hope that I can someday repay those as I support someone who needs my help in the name of the people whom I acknowledged here.

TABLE OF CONTENTS

ACKNOWLEDGMENTS	iv
LIST OF TABLES	x
LIST OF FIGURES.....	xi
ABSTRACT.....	xiii
CHAPTERS	
1 INTRODUCTION	1
2 GENERAL INFORMATION ON KOREAN IMMIGRANTS	14
Korean Immigrants in the U.S.	14
The First Wave Immigrants	14
The Second Wave Immigrants	16
The Third Wave Immigrants.....	18
Assimilation Patterns of Korean-Immigrants in the U.S.	20
The Exigency Stage	20
The Resolution and Optimism Stage	21
The Stagnation Stage.....	21
Korean-Americans in Koreatown, Los Angeles.....	22
The Korean People.....	28
The Korean Ethos	31
Jeong (정).....	31
Hahn (한).....	32
3 REVIEW OF LITERATURE.....	33
Life-Change Stress (LCS).....	34
Psychoneuroimmunology (PNI)	37
Spousal Death or Separation.....	37
Disasters	39
Daily Hassles.....	42

Culture-Bound Syndromes (CBS).....	45
Taijin Kyofusho.....	48
Voodoo Death.....	48
4 STATEMENTS OF PROBLEM AND STUDY PURPOSES	49
Problems in Life-Change Stress Studies	49
Problems in Psychoneuroimmunological Studies	51
Problems in Disaster Studies	55
5 THEORETICAL STUDY MODEL AND HYPOTHESES	58
6 STUDY MATERIALS AND METHODS	62
Study Subjects	62
Saliva Samples	63
Self-Rating Psychometric Questionnaires.....	64
Laboratory Analysis	65
Single Radial Immunodiffusion for s-IgA Assay	65
Radioimmunoassay for Cortisol	66
Statistical Analysis	67
7 STUDY RESULTS	68
Demographic Characteristics of Victims.....	69
Psychosocial-Neuroimmunological Findings.....	71
Group Differences in Self-Rating Psychometric	
Measurements through All Phases	71
Group Differences in Neuroimmunological Profiles	
through All Phases	76
Relationships between the Self-Rating Psychosocial	
Variables and Neuroimmunological Profiles	80
The Nature of Life-Change Events of Victims	81
Relationship between Stressful Life-Change Events	
and Psychological Profiles	83
Group Difference in Behavioral Changes	84
Group Differences in Psychological Profiles by the	
Degree of Life-Change Events	85
Correlation between Psychological Profiles to	
Life-Change Events.....	86
Group Differences in Depression Scores Six	
Months after the Riots.....	86
Cultural Findings of Hwa-byung (화병).....	89

8 DISCUSSION.....	92
Demographic Characteristics and Stress	92
Psychoneuroimmunological Changes and Stress	100
Culture-Bounded Stress Syndrome, Hwa-byung (화병).....	109
9 CONCLUSION.....	114
LIST OF REFERENCES.....	116
APPENDIX.....	142
BIOGRAPHICAL SKETCH	154

LIST OF TABLES

Table	Page
6-1 The Number of Survey Participants.....	63
7-1 Demographic Characteristics of Victims	70
7-2 Group Differences in the Frequency of Life-Change Events and the Frequency of Somatization at All Phases	72
7-3 Significant Phase Differences in Psychoneuroimmunological Profiles in Property-Damaged Victims	73
7-4 Group Differences in Cortisol and s-IgA Level at All Three Phases	77
7-5 The Nature of Stressful Life-Change Events in Victims	82
7-6 Pearson's Correlation Matrix of Life-Change Events and Psychoneuroimmunological Profiles.....	83
7-7 Stepwise Regression on Cortisol Profiles to Predict the Most Stressful Life-Change Events	83
7-8 Group Differences in Behavioral Habits by the Degree of Life-Change Events	84
7-9 Group Differences in Psychoneuroimmunological Profiles by the Degree of Life-Change Events	85

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1-1 Koreatown and the Riot-Torn Areas in South-Central Los Angeles	6
1-2 Koreatown before the Riots	7
1-3 Koreatown during the Riots: About 2,250 Korean- American Owner Stores were Destroyed by Arson Fires and Looting	8
1-4 Koreatown during the Riot: Korean-Americans Protected their Firms after Realizing Failure in Protection	9
1-5 Korean-American Victims of the Riots Demonstrate at the Los Angeles City Hall (the Author and her Son in the Center of the Picture)	10
1-6 Koreatown Six Weeks after the Riots	11
1-7 Koreatown Six Months after the Riots	12
1-8 Koreatown 12 Months after the Riots.....	13
5-1 Theoretical Model for Psychosocial-Neuroimmunological Changes in Korean-American Victims of the Riots.....	60
7-1 No Significant Phase Difference in the Frequency of Life Change Events in Both Groups	74
7-2 Significant Group Differences in the Frequency of Somatization and Phase Difference of Somatization in Property-Damaged Victims	75

7-3	Significant Group Differences and Phase Differences in Cortisol Levels in Property-Damaged Victims	78
7-4	Significant Group Differences and Phase Differences in s-IgA Levels in Property-Damaged Victims	79
7-5	Significant Inverse Relationship between Salivary Cortisol and Salivary IgA Levels at Six Weeks after the Riots.....	80
7-6	Significant Linear Relationships of Psychoneuroimmunological Profiles to the Life- Change Events at Six Weeks after the Riots.....	87
7-7	Significant Group Difference in Depression Scores at Six Months after the Riots.....	88

Abstract of Dissertation Presented to the Graduate School
of the University of Florida in Partial Fulfillment of the
Requirements for the Degree of Doctor of Philosophy

HWA-BYUNG (ANGER ILLNESS), THE PSYCHOSOCIAL-
NEUROIMMUNOLOGICAL IMPACT OF THE 1992 LOS ANGELES RIOTS
ON KOREAN-AMERICAN VICTIMS

By

Juna Byun

April 1994

Chairman: Leslie Sue Lieberman

Major Department: Anthropology

Korean-American victims were surveyed in Koreatown, Los Angeles, six weeks (June 1992) and six months (December 1992) and 12 months (April 1993) after the Los Angeles riots of April 1992. In June 1992, 194 victims (126 property-damaged victims and 68 non-property-damaged victims) were investigated. 59 (32 property-damaged victims, 27 non-property-damaged victims) in December 1992 and 115 (59 property-damaged victims, 56 non-property-damaged victims) in April 1993 were investigated. Standardized self-rating psychosocial instruments, cultural finding records, and chemical profiles of saliva samples were employed to examine the psychoneuroimmunological impact of riot distress associated with property damage.

The results show that there were significant group differences at all three phases in the frequency of stressful life-change events, in the frequency of somatization, in salivary cortisol levels, and in salivary immunoglobulin A (s-IgA) levels. The frequency of stressful life-change events was about four times higher and the frequency of somatization was about five times higher in property-damaged victims than those of non-property-damaged victims. Cortisol levels were about two times higher and s-IgA levels were about four times lower in property-damaged victims as compared to non-property-damaged victims. These trends peaked at six months after the riots. Cortisol levels showed a significant positive linear correlation with the frequency of life-change events and of somatization and an inverse correlation with s-IgA levels in both groups. There was a linear relationship between psychoneuroimmunological profiles and the degree of life changes in the comparison of low, moderate, and high degree of life-change groups. Change in residency followed by change in work was perceived as the most stressful events affecting Korean-American victims.

Furthermore, these results were supported by a culturally and highly vocalized somatic syndrome, *haw-byung* (화병, anger illness), related to *hahn* (한), an ethos of a victimized-extreme anger focused at mainstream society, because of the failure of protection and negligence in the repair of damaged property.

These results suggest that property-damaged victims who suffered from the highly stressful life-change events tended to be chronically more prone to illness.

CHAPTER 1

INTRODUCTION

Since 1903, the United States has been the primary focus of Korean immigration. The process of immigration from Korea to America is tedious and painstaking, but the symbols of America, such as the Statue of Liberty and the ideas of freedom, justice, equal opportunity, protection of human rights and labors, and economic and educational opportunity, have persisted as elements of the Koreans' version of the American dream. The dream of immigration to America causes a psychological state among Koreans called *imin-byung* (immigration illness) that was especially prevalent from 1970 to 1980 among urban Koreans. With this vital American dream, Koreans have been one of the most rapidly successful immigrant groups in the U.S., particularly in Los Angeles, California. Since 1980, their numbers have risen rapidly, with approximately 30,000-20,000 Koreans being admitted annually. The percentage of increase over previous years from 1970 to 1980 was over 400%. According to the 1990 U.S. Census Report, there are 798,849 Korean-Americans in the U.S., a gross underestimate.

Los Angeles has been a launching area for new arrivals. The Korean-American community of southern California numbers over 400,000 people, or approximately 30% of the total number of Korean immigrants in the U.S. (Kim 1993). They are composed almost

entirely of middle-class urban Korean immigrants who have arrived there during the last twenty years (Kim 1993; Yu 1983). According to the Los Angeles Korea Times (Jan. 3, C5, 1994), there are 1,420,532 Korean immigrants in the U.S. by the end of 1992. Among them 442,952 Korean immigrants reside in Los Angeles.

The economic achievement of Korean-Americans has been outstanding (Light and Bonnacci 1988; Yu et al. 1982). According to Light and Bonnacci, Korean-Americans have brought economic prosperity to the ghetto areas in the South-Central Los Angeles. Korean-Americans have built their economic success over a period of 30 years by a work ethic. One recent study indicates that 53% of Korean male workers and 45% of all Korean workers in Los Angeles are self-employed. The 1980 census showed that Korean immigrants had the highest self-employment and educational rates among 17 recent immigrant groups.

For over a decade, researchers have demonstrated that stressful life events produce psychological and physical illness. It is evident that the impact of stressful life events, such as bereavement, immigration, and disasters, has formed a cornerstone of the argument that stressful events can lead to health problems (Dohrenwend and Dohrenwend 1978). Clinical studies have argued that stressful life events in general have a significant role in one third of psychiatric disorders. Two-thirds of these cases can be attributed to the experience of particular types of life events (Cook and Hole 1983). Other investigators have found an association between life events and various mental illnesses such as schizophrenia (Brown 1974), depression (Brown 1974; Brown and

Harris 1978; Johnson and Sarason 1978), attempted suicide (Paykel 1974).

There are many studies relating stressful life events to physical illnesses. These illnesses include myocardial infarction (Connolly 1976), amenorrhea (Harris 1984), birth of low weight babies (Newton et al. 1979), and gastrointestinal disorders (Craig and Brown 1984; Hui et al. 1992).

Studies on immigrants, and especially on refugees, indicate stressful life-change events as crucial factors in psychological, physical, and behavioral problems. Immigration is a process of radical life-change events: from the stage of uprooting, to migrating, and finally to rerooting in a new geo-sociocultural environment. Some of the research has revealed that stressful life changes experienced by oriental immigrants, in spite of their success, have contributed to problems, such as juvenile delinquency, alcoholism, alienation of the elderly, spouse abuse, inter-generation conflict, and mental disorders (Koh et al. 1986; Kuo 1984). A study of Korean-Americans in the Chicago area revealed that there was a significant correlation between mental health and economic failure, especially among males (Hurh and Kim 1990a). An examination of the prevalence of symptoms of depression among Asian Americans in Seattle revealed that Koreans exhibited the highest depression rates in comparison with Chinese, Japanese, and Filipino Americans (Kuo 1984). There are several factors that may explain the high prevalence of depression among Korean-Americans. One of the major factors is an extremely high rate of failure in Korean small businesses. For example, 50% of Korean-owned small businesses in

Los Angeles fail within one year, and as many as 70% fail within three years. The other is the high concentration of small businesses located in life-threatening districts (Kim 1993).

Studies relating stressful life-change events to psychological illness in natural disasters have shown that personal and property damage create serious psychological problems. The studies asserted that stressful life-change events, especially personal and property-damage events, were highly correlated to mental health consequences (Young 1989; Shore et al. 1986).

Although the physical health effects of disasters are still under investigation, Wallace (1957) reported on an illness called disaster syndrome in which a sizable proportion of survivors experience digestive upsets and other symptoms of emotional tension. A study of the physical health effects of flood victims reported that a negative impact of physical health occurred after a peak period of one year in flooding disasters and decreased due to the combined effects of physical and psychological stresses to rebuild houses and businesses (Clayer et al. 1985; Logue et al. 1981).

None of the studies of riots categorized as social disasters in the U.S. support the existence of riot-induced psychopathological morbidity. Klee and Gorowitz (1970) found no increase in psychiatric admissions after the Baltimore, Maryland, riot; instead, there was a decrease in the number of African-American admissions. Greenley et al. (1976) found fewer psychological symptoms in suburban men and women after the New Haven, Connecticut, riot as compared with before the riot. Fishbain et al. (1991) reported that there was no increase or decrease in psychiatric admissions after

the Miami, Florida, riot. Unfortunately, few studies to date investigated the physical effects of riots.

During the 1992 riots in Los Angeles, which lasted 3 days, April 29 to May 2, there were reported 57 deaths, 2,382 injuries, and 5,200 buildings damaged, making the riots the worst in contemporary U.S. history. Property damage was over \$785 million, and approximately 16,000 businesses were destroyed in the approximately 8,000 arson fires in Los Angeles (Los Angeles Times May 11, B, 1992). Approximately 45% of the total property damage occurred among Korean-American businesses in South Central Los Angeles. About 80% of the Korean-American economy in the riot area was destroyed by 1,800 incidents involving fires and looting during the riots. The total amount of damage reached about \$200 million. About 2,250 Korean businesses were destroyed with an average individual damage of \$50,000 to \$60,000, although personal damage was minimal (one person was a homicide victim during the riots).

Over 40% of Korean-Americans who lived in Los Angeles county were economically dependent on businesses located in Koreatown. The majority of Korean-American victims as well as experts agree that the damage to the Korean-American economy was permanent and irreversible (Figure 1-1, 1-2, 1-3, 1-4, 1-5, 1-6, 1-7, 1-8) (Association of Korean-American Victims of the L.A. Riots 1993; Edward Lee Memorial Scholarship Foundation 1993; Korean-American Inter-Agency Council 1992).

The need for empirical research on the psychological and physical health of Korean-Americans as the victims of the riots experienced considerable stressful life-change events including property damage, is thus evident. In the present work, the psychological and physical consequences of this economic devastation and the nature of life-change events of property-damaged victims will be examined by the use of a longitudinal research design.

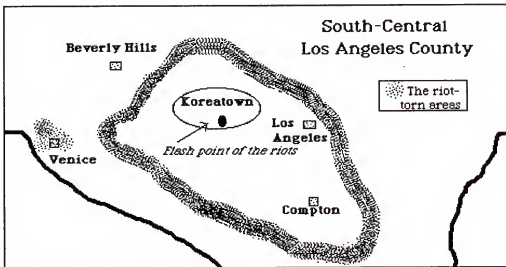


Figure 1-1
Koreatown and the Riot-Torn Areas
in South-Central Los Angeles



Figure 1-2
Koreatown before the Riots



Figure 1-3
Koreatown during the Riots:
About 2,250 Korean-American Owner Stores were
Destroyed by Arson Fires and Looting



Figure 1-4
Koreatown during the Riots: Korean-Americans
Protected their Firms after Realizing
Failure in Protection



Figure 1-5
Korean-American Victims of the Riots Demonstrate at the Los Angeles City Hall to Protest Neglect to Repair the Damage
(the Author and her Son in the Center of the Picture)



Figure 1-6
Koreatown Six Weeks after the Riots



Figure 1-7
Koreatown Six Months after the Riots



Figure 1-8
Koreatown 12 Months after the Riots

CHAPTER 2

GENERAL INFORMATION ON KOREAN-IMMIGRANTS

In this chapter, I present cultural information on Korean immigrants in the U.S., the history of their immigration, and the pattern of assimilation to mainstream American society based on the studies done by Hurh and Kim (1984, 1988). Korean immigrants in Los Angeles and in Koreatown, Los Angeles, will be presented followed by a discussion of ethnic background and origins.

The Korean Immigrants in the U.S.

In terms of its relationship with the West, Korea had remained the "Hermit Kingdom" until 1882 when Korea and the U.S. signed a treaty. Following the treaty, a team of Korean diplomatic envoys visited the U.S. in 1883 and 1884, and soon afterward, the first Korean legation was established in Washington, DC (Choy 1979; Hurh and Kim 1984).

The First Wave Immigrants

Before 1903, about 50 Korean students, political exiles, and merchants had arrived individually on American shores. The first great wave of Korean immigration to America occurred from 1903 to 1905. By 1905, a total of 7,226 Korean immigrants (6,048 men,

637 women, and 541 children) had reached Hawaii in 65 different ships. Another 1,033 Koreans immigrated to Mexico. The majority of immigrants who came from Korean port cities were young bachelors, between the ages of 20 and 30 and largely uneducated. They were recruited as laborers in sugar plantations in Hawaii. Because of the unbalanced gender ratio (10 men to every woman), frequent exchanges of photographs between prospective grooms in Hawaii and brides in Korea took place so that marriages could be arranged. As a result, 1,100 picture brides arrived between 1910 and 1924. Even so, many of the early male Korean immigrants (about 3,000) spent their lives as bachelors (Yu 1977).

Plantation life for these early immigrants was very hard because of segregation, low wages, extremely strenuous work, as well as language and cultural barriers. They endured this harsh life with hopes of returning to Korea someday. When Korea was occupied by Japan in 1910, however, they had no country to return to. Nevertheless, they remained very patriotic toward Korea. They started Korean language schools for their children, organized patriotic societies and military training centers, and sacrificed their own scarce funds to support Korean independence movements and the end of Japanese rule. (The well-known leader in Hawaii at that time was Syngman Rhee, who later established the Korean government-in-exile in Shanghai; he was elected as the first President of the Republic of Korea in 1948).

Subsequent to their initial migration to Hawaii, some early Korean immigrants moved to the mainland. The 1930 U.S. census showed fewer than 2,000 Koreans on the mainland, most of them

based in California. As already mentioned, they were subjected to severe racial discrimination, and they were described as the minority of minorities. Their life was a courageous, lonesome struggle in a hostile environment. Because the early Korean immigrants placed a high value on education, their children and grandchildren were encouraged to attain high levels of education, and many of them became successful professionals in the mainstream American society.

The Second Wave Immigrants

The second wave of Korean immigrants arrived in the U. S. between 1951 and 1964. This was a heterogeneous group, consisting of Korean wives of U.S. servicemen, war orphans, and students. A survey indicated that 37,063 Korean wives of U.S. servicemen arrived in the U.S. from 1950 to 1977. There have been few studies of this invisible group. These Korean wives of U.S. servicemen were doubly marginal, both in American society and in the Korean immigrant community. They suffered from culture shock, lack of education, isolation, poor communication in the family, a high divorce rate, and general alienation. There were some happy marriages, but physical abuse and mental health problems characterized many relationships, which often ended in divorce. After divorce, many of these women had economic difficulties because they lacked occupational skills (Kim 1978, 1980; Kitano and Daniels 1988).

Much less is known about Korean war orphans. Hurh and Kim (1984) indicated that 24,945 children were placed in Korean

orphanages in 1950. Of these, 6,293 were adopted in the U.S. between 1955 and 1966, mostly through the Holt Adoption Agency. About 46% of those adopted were of white and Korean parentage, 41% were of full Korean parentage, and the rest were of African-American and Korean parentage. Between 1962 and 1983, Americans adopted 45,142 Korean children (Kim 1987).

Kim (1977) conducted one of the few studies of adopted war orphans, in which he surveyed the self-concept of adopted Korean adolescents nationwide. The study revealed that adopted children were generally placed in middle-class, white, Protestant families living in rural areas or small cities. Most of the adopted children were assimilated into the mainstream American culture and showed little evidence of identifying with Koreans or Korean culture. Their self-concept was remarkably similar to the norms of other Americans. The study indicated that the adopted parents were generally satisfied with their Korean children. Overall, the placement of Korean children in American homes was regarded as very successful by the researcher.

A later study showed that adopted children encountered some racial problems as they became older because of their Asian physical appearance. The adoptees were seen as Asian, yet they were almost totally cut off from other Asian ethnic groups and from Korean culture. Living with a dual identity but, for the most part, without ethnic support, they may have had psychological problems as they grew older (Kitano and Daniels 1988).

The last group in the second wave of immigrants consisted of students who came to the U.S. to study at universities. About 6,000 came between 1945 and 1965. Although the data available for later years overlap with this data set, another survey showed that, between 1953 and 1980, a total of 15,147 Korean students left for the U.S. with student visas (Kim 1987). In addition, there were at least 2,000 to 3,000 Korean physicians who were in training as interns and residents in American medical centers during this period. Although no accurate data are available, the majority of these students and physicians remained in the U.S. and succeeded in professional careers. Those who returned to Korea became leaders in their fields.

The Third Wave Immigrants

The third large wave of Korean immigration was spearheaded by the Immigration and Naturalization Act of 1965, which raised the ceiling for the immigration quota among Asian countries. As a result, Koreans became one of the most rapidly growing immigrant populations in the U.S. This group of Korean newcomers was very different in composition from previous immigrants. Most of the latest immigrants consisted of young families with a mean adult age of 27.3 and an average household size of 3.8. The immigrants came from urban middle-class backgrounds, and one-half of them were college graduates. About 50% of them held professional, technical, or managerial jobs in Korea. However, fewer than one-third of these professionals have found comparable jobs after their arrival in the U.S.. This downward mobility has resulted in an increase in the

number of Korean owners of small businesses, such as dry cleaning stores, small groceries, fast-food restaurants, and other blue-collar or nonprofessional occupations.

During the period from 1966 to 1979, approximately 13,000 Korean medical doctors, dentists, nurses, and pharmacists entered the U.S., and according to a 1980 survey, approximately 4,300 Korean immigrant doctors had resident status (Kim 1987). Today, Korean immigrants are dispersed throughout the country, although they are more heavily concentrated in large urban areas, such as Los Angeles, New York, Chicago, Baltimore, and Washington, DC. About half of them own homes in suburban areas.

Although only 25% of the population in Korea is Christian, 60 to 70% of the new U.S. immigrants from Korea attend Korean ethnic Christian churches. There are more than 2,000 Korean churches in the U.S.. The high proportion of these Korean-ethnic Christian churches has not been found among other ethnic groups. Many Korean immigrants who were non-Christian in Korea may have been attracted to these Korean ethnic churches because they feel isolated and the ethnic church provides social and psychological support in addition to religious functions (Hurh and Kim 1988). Korean Christian churches seem to play the role of extended family to the otherwise isolated nuclear families, and they contribute an important function to social networking and community-building among Korean immigrants.

Korean immigrants in the U.S., however, like other immigrants, have experienced personal and institutional racial discrimination. Moreover, Korean immigrants are often regarded as the minority of

minorities among Asian-Americans. Because of their comparatively brief immigration history, Korean-American immigrants have much less political and community clout than, for example, Japanese-Americans and Chinese-Americans have in some locales. In spite of their hard and determined work to establish themselves as American citizens, Koreans have been the object of hate crimes and inter-ethnic conflict. This was amply demonstrated in the April 1992 Los Angeles riots, when much of Koreatown was destroyed.

Assimilation Patterns of Korean-Immigrants in the U.S.

Hurh and Kim (1984, 1988) conducted a series of sociopsychological studies on the adjustment process and mental health of Korean immigrants in the Los Angeles and Chicago areas. In one study, they conducted structured interviews with a sample of 631 Korean immigrants in the Chicago area and also administered four self-rating scales of mental health well-being to the same subjects. Based on their findings, Hurh and Kim developed a model of the stages of adjustment following migration.

The Exigency Stage

The first 1 to 2 years of resettling were the most stressful, and the immigrants were most vulnerable during this stage. The factors that contributed most to their difficulties were economic

hardship, culture shock, language problems, lack of social support, and family conflict.

The Resolution and Optimism Stage

The immigrants' mental health and life satisfaction improved the longer they stayed in the U.S. and the more confidence and mastery they gained in their new environment.

The Stagnation Stage

Their life satisfaction reached a plateau around the 15th year or thereabouts after immigration. The life satisfaction index remained flat or slightly decreased thereafter. Reportedly, the stagnation phase occurred because of identity ambivalence. Syndrome was characterized by nostalgia, a desire to return to Korea, and a feeling of relative deprivation and marginality compared with their white peer group. For example, many immigrant professionals realized that, although they had achieved a certain level in the corporate hierarchy (i.e., middle management), they had no chance for more upward mobility. They felt that institutional racism worked against them as Asian immigrants. Many believed it would be more worthwhile and meaningful to return to Korea and contribute to the advancement of their fields there, and some did return.

Thus, these studies showed that the level of life satisfaction over time produced an inverted J-curve. The exigency stage and the stagnation stage appear to be those that carry the greatest risk for mental and emotional problems.

Based on their research findings, Hurh and Kim (1988:238) also developed a conceptual model of the adaptation process called the "adhesive and additive mode of adaptation" of the immigrants. They found that the ethnic attachment of Korean immigrants remained strong regardless of the length of their stay in the U.S., and the degree of their education and acculturation to mainstream society. In other words, the progressive Americanization of Korean immigrants and their strong ethnic attachment were not mutually exclusive. Americanization was added on to their Koreanness and did not eliminate or modify their original identification. The adhesive adaptation pattern indicated that the immigrants did not resist acculturation but rather sought to adopt the new culture whenever possible without discarding or weakening the old. This was an important finding in understanding the psychosocial life of Korean immigrants. Koreanness is a permanent cultural capital from which Korean immigrants can not be deprived. In all likelihood, this model applied only to the first-generation immigrants, and not to second- or third-generation immigrants.

Korean-Americans in Koreatown, Los Angeles

This section provides an overview of the Korean-American community, including its emigration and settlement patterns, demographic characteristics, occupational patterns, family, children, education, and race relations.

Although the migration of Koreans, mainly in the form of transmigration from Hawaii, to the Los Angeles area dates back to the early years of the 20th century, the Korean-American community in southern California, as I presented in an earlier section, evolved in the late 1960s, following the passage of the Immigration Act of 1965. Koreans came to California, especially Los Angeles and San Francisco, for its mild climate, booming economy, multiethnic setting and lifestyle. These two cities were the first stop enroute to other cities in the U.S. and became the site of the Korean independent movement. Southern California attracted a large percentage of these postwar immigrants. The Korean-American community in southern California, however, with its small population and little activity remained largely invisible.

Presently, the Korean-American community in southern California has an estimated population of 500,000, or approximately one-third of the total number of Korean immigrants in the U.S.. Experts contend that surveys, censuses, and other studies have grossly under-counted the number of Koreans in the U.S.. Korean immigrants have formed several communities in southern California, including the large Korean-American community in Los Angeles, and in several other urban centers such as the San Fernando Valley, Monterey Park, Cerritos, Anaheim, San Diego, and Riverside. Koreatown in Los Angeles is the largest and attracts more attention and interest among Koreans as well as non-Koreans. Koreatown is bounded by Beverly Boulevard on the north, Crenshaw on the west, Hoover on the east, and Pico on the south. Though many newly arrived Koreans settle in Koreatown, the area is predominately

Latino. Koreatown in Los Angeles may represent a typical settlement pattern similar to that of other Asian ethnic communities. Japanese immigrants formed Little Tokyo and Chinese immigrants formed Chinatown in the heart of Los Angeles. Koreans own most businesses, particularly retail, in Koreatown. Also, many Korean churches, social and personal services, and retail businesses with their colorful Korean-language signs and billboards virtually have turned Koreatown into Little Seoul. Though Koreatown is the social, economic, and cultural center of the Korean population in southern California, it is often the first stopping place for Korean immigrants. As Korean immigrants operate their businesses successfully and become adjusted to the American life, they tend to move out of Koreatown into suburban areas to start better and larger businesses and to enroll their children in better schools.

There are push and pull factors which have affected the expansion of the Korean-American community in southern California. On the push side, Korea experienced a rapid urbanization beginning in the 1960s under the military regime of President Park. The ambitious government plans for industrialization were sometimes accompanied by social upheaval. Not enough employment opportunities pushed Koreans to emigrate to America. Those who were dissatisfied with the political system sought more freedom in the U.S.. Also, parents sought better educational opportunities for their children in America. On the pull side, the Immigration Act of 1965 led to a large influx of Korean immigrants to America, resulting in the fast-growing Korean-American community in southern California. In addition, America was perceived as the land

of opportunity where immigrants could have a fresh start and could achieve the American dream. Lastly, quality education convinced many Koreans to emigrate to California.

Overall, the Korean-American community in southern California has developed sometimes unique characteristics in their demography and occupational patterns. According to Los Angeles Korea Times survey done by Dec. 1992, the median age of the Korea population was 23.7 years for males and 27.1 for females. Also, the average size of the Korean immigrant family was 3.8. Typically the Korean family had 2 to 4 members. Prior to their migration to America 73% of men had completed college education, whereas 63% of the women had received college education. In terms of employments, Korean immigrants were in the following occupation: only 6.5% were in manufacturing; 1.4% in construction; 38.6% in wholesale and retail businesses, such as trading (7%), food (8%), electrical (2.1%), jewelry (2.2%), and automotive (3.9%); 8.1% in the restaurants; 4.7% real estate business, 3.5% in hotel and transportation; 6.1% in various social services; 8.9% in personal services such as legal and accounting; 7.9% in laundry and hairdressing; and 5.7% in religious occupations. Another survey estimated that there were approximately 800 hamburger stores, 200 gas stations, and 356 garment factories owned by Koreans in southern California (Los Angeles Korea Times Jan. 3, C4, 1994). It is very common before entering into self-employment and other occupations for a large percentage of Korean immigrants to find employment in menial and manual labor or semi-skilled jobs when

they first come to Koreatown. These are in the category of job downgrading.

Several reasons may be offered. First, in spite of their higher educational and professional background, the majority of Korean immigrants have not acquired a working knowledge of spoken English, an indispensable prerequisite for finding employment. Second, Korean immigrants are not familiar with the American work style. Even if they are qualified, many Korean immigrants have no idea as to how to handle their jobs under employers and how to behave at the workplace. A third factor contributing to the job downgrading of Korean immigrants is racial prejudice and discrimination. Thus, without verbal skills in English, unfamiliarity with the American work style, and prejudice and discrimination, Korean immigrants find menial and manual jobs mostly with fellow Korean employers. The next step for under employed Korean immigrants is moving up to self-employment, mostly running small businesses, corner stores, or home-shop owners. This process, graduating from underemployment to self-employment takes from three to six years. Therefore, a great deal of perseverance and hard work are required of Korean immigrants even to find an opportunity for upward mobility in America society.

Alarmingly, the rate of failure is extremely high among Korean small businesses. One study estimated that, in the Los Angeles area, 50% of such businesses would fail within one year, and as much as 70% may fail within 3 years. By owning their own small businesses, Korean immigrants find dignity, security, and independence, instead of discrimination and uncertainty. Secondly, because they can

depend on family members and relatives to work long hours, Koreans are lured to small businesses. Yet, one should note that Korean-American businesses are different from the mainstream businesses in terms of the amount of capital: 20.3% of small Korean businesses had less than \$10,000 capital; 20.9% between \$10,000 and \$20,000; 28.1% between \$20,000 and \$50,000; 18.1% between \$50,000 and \$100,000, and only 12.4% more than \$100,000. Small loans available from banks, particularly Korean banks in the Los Angeles area, and own savings from Korea or from their employment are some of the means of raising fund for their small businesses.

In regard to the social life, Korean immigrants in southern California form close-knit groups among close relatives, alumni hometown friends, and business friends. Christian churches in southern California play an integral role in the life of Korean immigrants. The number of Korean church is astounding. Southern California alone has over 400 churches. Another public institution that plays an important role in the life of Korean immigrants is the mass media, both printed and broadcast. They act as opinion leaders, guides, and counselors, and disseminate necessary information to Korean immigrants. In southern California seven daily newspapers, including major Seoul dailies, several weekly papers, and several television channels are available for news-hungry Korean immigrants.

Even though the Korean-American community is economically prosperous, the first generation-centered family life in Korean immigrant families demonstrates a lack of communication and dialogue between parents and children. As immigrant parents are

engaged working long hours in their small businesses, they find no time even to talk to their children. This lack of communication leads sometimes to delinquency on the part of children. This is becoming a serious problem, a worsening problem in the Korean-American community (Los Angeles Korea Times May 11, B, 1992; April 8, B, 1991). Another problem is the lack of cohesion and leadership in the community; the Korean-American community was divided at times. During the riots in Los Angeles in April 1992, the community was without strong leadership and a united voice in coping with the crisis. Factionalism, the other side of the lack of cohesion in the Korean-American community, poses a serious problem.

Lastly, race relations for the Korean-American community present some problems. Having come from a history and background of a homogeneous society in Korea, Korean immigrants generally lack experience in multi-ethnic living. Since the riots, Korean immigrants have begun to seriously consider racial relationships, rather than economic prosperity, as a critical factor related to their success and happiness in American life.

The Korean People

The Koreans are an ancient and homogeneous people with a unique history, culture, and language distinct from both the Chinese and the Japanese. The Korean people are descended partly from the Mongolian race and partly from the Tungus and Proto-Caucasoids who

arrived from the plains of Manchuria or central Asia. The traditional view about the origin of the Korean people is based on legend.

Tradition places the founding of the tribal state in the year 2,333 B.C., with the descent of Tan'gun-wanggom, a spirit-king of divine origin. The Korean language is of the Ural-Altaic language family, which also includes Japanese, Turkish, Mongolian, and Manchu.

Despite the fact that the official writing system of the Korean government for many years was that of Chinese, the Koreans never adopted the Chinese language, although they did borrow some words from it. The Korean language has not a sufficiently large dialect to provide a barrier to understanding. During the reign of King Sejong (1397-1450), a royal commission of scholars, after many years of study, developed a Korean alphabet. This took place during the early years of the Yi Dynasty. The Korean alphabet is phonetic and consists of 19 consonants, 8 vowels, and 2 semivowels. Today it is named Han-gul (GKB rMf), and it is the oldest known alphabet of its kind still in use. According to Grant (1979, p.11), "Han-gul (GKB rMf), as it is now called, is perhaps the most scientific alphabet in general use in the world."

Use of an inappropriate sociolinguistic level of speech is socially unacceptable and is normally interpreted as having a special message such as intended formality (e.g. use of the honorific level is acceptable) or disrespect or contempt to a social superior (e.g., use of the familiar level when the honorific is appropriate). This speech system is an important linguistic feature characterizing interpersonal relationships in the Korean culture.

Korea is a peninsula spanning 86,000 square miles, roughly the size of Minnesota. It is strategically located in the heart of northeast Asia, surrounded by the People's Republic of China, Japan, and the Russian Republic of the Commonwealth of Independent States. All three nations have long been interested in dominating Korea and using the Korean peninsula as a bridge through which to invade neighboring countries. Korea's national history has been the story of its struggle to maintain independence from such external interference (Choy 1979). Korea's geography as a natural bridge between the Asian mainland and Japan not only invited military attack over the centuries but also provided a cultural link between China and Japan. Confucianism and Buddhism, along with other aspects of art and culture, were introduced to Japan through Korea. However, Koreans have been able to maintain their own unique cultural identity in terms of language, art, custom, and belief in a common historical destiny (Choy 1979).

In the twentieth century, Korea was occupied by the Japanese from 1910 to 1945. After the end of World War II, the U.S. and the then Soviet Union divided Korea into North and South Korea. The Korean War (1950-1953) erupted in the context of a Cold War struggle between the superpower camps. Unfortunately, Korea still remains divided, despite recent efforts to begin a dialogue toward unification of North and South Korea. Many Korean families are still separated because of this division. Koreans have been subject to oppression both in their native country and in the U.S., where they came to escape oppression.

The political hardship came not only from outside of the country but also from inside the country from Korean political leaders who dictated to Koreans for the last 30 years. In May 1980, Kwang-ju civil unrest was the bloodiest struggle for democracy in recent Korean history (3,000 civilians were killed by the previous dictator, Mr. Jeon; the author houses the Kwag-ju civil unrest video tape).

Koreans have dealt with such social turmoil through various means. Confucian teaching has been a fundamental and traditional force in Korean culture, although in recent decades Christianity has gained strong influence. Self-reliance, self-discipline, and a strong work ethic are emphasized, and education and academic achievement are considered important steps in achieving success and social distinction (Yu and Kim 1983).

The Korean Ethos

In order to better understand Korean people, it would be helpful to know about the ethos influencing Korean social attitudes and behavior. The most important to understanding the Korean ethos: Jeong (WJə) and Hahn (GKB).

Jeong (WJə)

An emotive term referring to a special interpersonal bond of trust and closeness, jeong (WJə) is an important word in the Korean ethos. There is no English equivalent for jeong. It encompasses the

meanings of a wide range of English terms-feeling, empathy, affinity, compassion, pathos, sentiment, and love. Jeong (WJð) strengthens the bonding of relationships between friends, teachers and students, or parents and children, and wives and husbands. Jeong (WJð) is considered an essential element in human life, promoting the depth and richness of personal relations. Because of jeong (WJð) relationships are made deeper and longer lasting. In times of social upheaval, calamity, and unrest and of difficulties in interpersonal relationships, jeong (WJð) is the only binding and stabilizing force in group and individual relationships (Kim 1993). Jeong (WJð) is mainly composed of loving jeong (RhDNBWJð) and hating jeong (alDNBWJð). Whether in time of love or in time of hate for each other, Koreans who keep jeong (WJð) make their relationship longer and deeper. The opposite word of Jeong (WJð) is not hatred, but indifference.

Hahn (GKB)

Hahn (GKB) refers to feelings of anger or resentment. It is a form of a victimization syndrome in which hahn (GKB)-ridden Koreans feel victimized or unjustly treated. Some Korean psychiatrists think that hahn (GKB) is deeply imprinted in the collected subconscious of Koreans, who have endured much in their history. They make the analogy of the Jewish psyche and its connection to the Holocaust. Hahn (GKB) is an important and dynamic contributing factor to the manifestation of clinical depression, as well as to the culture-bound syndrome hwa-byung (GJQUð; Prince 1989), which I will discuss related to hahn (GKB) in chapter 7.

CHAPTER 3

REVIEW OF LITERATURE

This chapter will provide a review of recent evidence that describes the association between life-change stress (LCS) and health, which is now termed the field of psychoneuroimmunology (PNI). The relationships between psychological stress and physical states have a long and colorful history. As early as the second century Galen reported that melancholy women appeared more likely to develop cancer than sanguine women. Despite the lengthy history of such conjectures, it is only recently that the knowledge base and methodological skills have sufficiently developed to allow empirical testing of these ideas. Scientific exploration of this topic has progressed slowly over several decades, only to explode in the 1980s following the publication of Ader and Cohen's landmark work (Ader and Cohen 1975). The complexity of the fields subsumed by PNI (psychoneuroimmunology: psychology, behavioral medicine, endocrinology, neuroscience, and immunology) has provided a wealth of information. However, this very complexity poses problems for the researcher especially related to social disaster stress. A disaster can be defined as a massive life-change events. Disaster stress is an unpredictable and unavoidable acute stressor followed by a long-term daily life hassles to restore stability. From this I will present studies on life-change stress (LCS) in terms of

its consequence of health and illness from the psychoneuroimmunological perspective. The discussion on Life-change stress will be divided into two categories: 1) spousal death or separation and 2) disaster studies. Life hassle stress (LHS) studies will be focused on examination. Lastly, culturally bounded syndromes will be discussed.

Life-Change Stress (LCS)

Psychological stressors have been conceptualized as interactions among external threats, internal evaluations of threats, personal resources available to deal with the threat, and potential physical and psychological outcomes (Lazarus and Folkman 1984). These interactions are thought to result in the cognitive, emotional, physiological, and behavioral manifestations of stress. The physiological effects of stress can generally be categorized under the rubric of arousal. Arousal would include such physiological alterations as elevated heart rate, blood pressure, and respiration, as well as the endocrine changes associated with stress. Emotional presentations are typically interrelated with physiological arousal, and are often grouped under the heading of anxiety. Anxiety has more simply been described as a disagreeable emotion associated with anger, fear, and depression (Lewis 1970).

In recent years some researchers in the field of psychological stress have concentrated on an aspect of the field known as life events (Dohrenwend and Dohrenwend 1974). The major focus shared

by researchers in this field is the general hypothesis that life events play a role in the aetiology of various psychological disorders (Dohrenwend 1973; Brown 1974; Paykel 1974) and somatic illnesses (Blake 1992; Holmes & Masuda 1974; Hui et al. 1991, 1992; Maclean 1992; Rahe 1974; Rahe et al. 1964).

Among the somatic illness which have been associated with life events are rheumatoid arthritis (Heisel 1972), myocardial infarction (Rahe and Paasikivi 1971), sudden cardiac death (Rahe and Lind 1971), and active duodenal ulcer (Hui et al. 1992).

A study which related stressful life-change events and duodenal ulcer showed that the mean positive life event scores were significantly lower in duodenal ulcer patients than in disease and healthy controls, and lower in patients with an active ulcer than in those in remission (Hui et al. 1992). Psychosocial correlation of morbidity and functional status in adult chronic lung disease showed that higher life-change score predicted higher levels of morbidity (Blake 1991). Non-ulcer dyspepsia patients have higher negative perception of major life events in spite of the fact that the number of events were the same as the control group, which indicates that psychological factors may play a role in pathogenesis of non-ulcer dyspepsia (Hui et al. 1992). In a large population-based, epidemiological study of colorectal cancer, a survey presented that a number of recent life changes such as major illness or death of a family member, major family problems and major work problems were found to be significantly more common for cases over the five years preceding diagnosis compared to controls. These cases also reported being significantly more upset with their recent life

changes than did control (Kune et al. 1991). Chronic primary headache patients reported significantly more stressful life events with negative impact on their life style in the years prior to headache onset compared with headache-free control. A sudden increase in the frequency and magnitude of stressful life events appears to herald the onset of headaches independently of the developing clinical headache syndrome (De Benedittis et al. 1990).

The psychological impact of life-change stress argued that, in general, 32 per cent of psychiatric cases can be attributed to stressful life events. Within female samples, approximately 41 per cent of psychiatric cases can be attributed to life events. It is suggested that the effect of specific types of events on specific psychiatric disorders may be of even greater importance.

Lower socioeconomic status and negative life change and severity of illness were related to less optimal psychological adjustment among children age 6-14 years (MacLean 1992). Life-change stress of divorce or separation were seen to increase the risk of enuresis of children at age levels of three, four, and six year (Jarvelin et al. 1990). The total number of life events was a significant predictor of changes for the age of 3 and 24 month children in the level of cognitive and social-emotional functioning. Changes in caregiver and marital discord were the best predictors of a child's social-emotional development, in the meanwhile, the experience of separation and divorce among adult women provided an opportunity for ego development (Bursik 1991). Girls generally reported more life events associated with mostly interpersonal and family relationships, however, self-destructive and aggressive

coping behavior increased for boys (Groer et al. 1992). The lower socioeconomic class was associated with more past life changes, more subsequent life events, and weaker social support than high class; however, there was little evidence that lower class people were more vulnerable to stressors (Kessler et al 1985).

Recent developments of psychoneuroimmunological studies on the relationship between life-change stress and immunity has considerably contributed to investigation of the mechanism of psychosomatization associated with life-change stress. It would be of great interest to prospective examinations of the relationships among stress, endocrine measures, carefully chosen immunological measures, and health status. In the next section, I review studies on 1) the mechanism of psychoneuroimmunology and 2) the applications of psychoneuroimmunology to the fields of life-change stress studies.

Psychoneuroimmunology (PNI)

In the past decade, researchers have begun to map out how stress-related neuroendocrinological changes impinge upon immune function. For the purposes of this chapter, I have focused primarily on the immunological effects of life-change stress.

Spousal Death or Separation

Stressful-life change events and psychological distress have been linked to the development and course of many human diseases. For example, one of the most stressful life experiences, the death of

a spouse, is associated with an elevated mortality rate among bereaved spouses that varies with age, sex, and time elapsed after the loss. Epidemiological data indicate that separated and divorced individuals are at a greater risk for mental and physical illness on an actuarial basis than married, single, or widowed individuals (Bloom et al. 1978; Verbrugge 1985). Divorce can be conceptualized as a chronic stressor for those experiencing it, since adjustment appears to occur over several years. Furthermore, continued preoccupation with the (ex)spouse (attachment to the former spouse) has been hypothesized to lead to distress-related symptoms (Weiss 1975).

The earliest reported human work by Bartrop et al. (1977) that explored the effects of spousal death on mitogen-stimulated lymphocyte proliferation. These researchers examined immune function (T- and B-lymphocyte number and function) in 26 bereaved spouses two and six weeks after bereavement; 26 hospital staff members served as controls. Results indicated that average T-cell function as measured by mitogen-induced stimulation was reduced following bereavement. In a later prospective study, Schleifer et al. (1983) examined 16 men whose wives were dying of breast cancer. Peripheral blood was collected before and after the wives' deaths. Blastogenic responses following the death of their spouse were significantly suppressed compared to both prebereavement values. Consistent with these results, Irwin et al. (1989) reported that women whose husbands had recently died of lung cancer evidenced greater depression in immune function than women whose husbands were undergoing treatment for metastatic lung cancer, or women

with healthy husbands. In a related study, Linn et al.(1984) found that only bereaved subjects with high depressive symptom scores demonstrated reduced lymphocyte responsiveness. Kiecolt-Glaser et al. (1987) studied 38 separated/divorced women compared to sociodemographically matched married controls. Attachment to the former spouse was negatively associated with immune function in this group. In a follow-up study (Kiecolt-Glaser et al. 1988) examining the effects of marital discord in males, 32 separated/divorced men were compared with matched married controls. Separated/divorced men appeared more psychologically distressed, lonelier, and reported more recent illnesses than married men. These individuals also had significantly poorer immune function. Separated and divorced men who had both initiated the separation and were separated within the last year appeared less distressed and reported better health than the noninitiators.

Disasters

There are three different approaches of psychological health studies related to natural or human-made disasters. The first, a psychopathological approach, depends on pathological case findings using psychiatric clinical records or self-rating psychometrics. The second, a psychophysiological approach, focuses on chemical responses such as stress hormones related to self-rating psychological states using blood or urine samples in conjunction with psychometric scales. The third, a sociological approach, focuses on group-behavioral changes using surveys. Psychopathological and psychophysiological studies have argued that

human-made (technological and social) disasters, as well as natural disasters, create severe psychopathological health consequences. Tyhurst (1951) found that during the impact period of disasters, many victims are stunned or shocked. One recent analysis, the Buffalo Creek Disaster study, found that the post-disaster incidence of mental illness in the disaster-struck community increased enough to destroy the community (Church 1974; Erickson 1976; Lifton and Olson 1976). In another example, stress effects were found in residents of the area surrounding the Three Mile Island (TMI) nuclear power plant, site of a serious accident in 1979 (Schaeffer and Baum 1984; Baum et al. 1983, 1985). Cortisol (stress hormone) levels remained high over an 18 month period in this population because of the persistent threat of another incident and of potential long-term health consequences of exposure to radiation (Baum et al. 1985). McKinnon et al. (1991) found suppressed immune components including high levels of neurophils, and fewer B and Natural Killer cells were positively correlated with high cortisol levels among Three Mile Island residents compared with demographically-matched control groups living in another area.

While the incidence of negative psychophysiological effects of a natural disaster is undisputed, the findings of mental health studies documenting the psychopathological effects of disaster have remained controversial as a result of contradictory findings from sociological studies which focused on group behavioral change (Shore et al. 1986; Fishbain et al 1991). Sociological studies have claimed that the negative psychological impact of natural disasters has been overstated or misinterpreted by news media (Quarantelli

and Dynes 1970). None of the studies of riots categorized as a social disasters in the United States support the existence of riot-induced psychopathological morbidity. Klee and Gorowitz (1970) found no increase in psychiatric admissions after the Baltimore, Maryland riot and a decrease in the number of African-American admissions. Greenley et al. (1975) found fewer psychological symptoms in suburban men and women after the New Haven, Connecticut riot as compared with before the riot. Fishbain et al. (1991) reported that there was no increase or decrease in psychiatric admissions after the Miami, Florida riot.

A study to investigate the relationship between stress and the self-reported incidence and prevalence of physical illness and emotional disorders in a sample of middle-aged, working-class men during the recovery period of a natural disaster is one of few studies on physical health consequences from the natural disaster (Melick 1978). Hypotheses concerning the illness behavior of respondents who had and who had not experienced flooding of their housing unit were tested. The research design entailed personal interviews with a stratified, multistage probability sample of 91 men in two upstate Pennsylvania communities flooded in June 1972. Although there were no significant differences in the number and nature of the illnesses experienced by the flood and non-flood respondents, there were significant differences in the duration of illness and self-perceived influence of the flood on the health of the two sub samples of respondents (Melick 1978).

Living near the site of the nuclear disaster at Three Mile Island has also been examined as another potential chronic stressor

(McKinnon et al. 1991). There were persistent behavioral and endocrinological differences in Three Mile Island residents compared to matched controls living 80 miles from the power plant. These differences include elevated levels of urinary epinephrine and norepinephrine, as well as elevated cortisol levels. Immunological data revealed that the Three Mile Island residents have fewer B-lymphocytes, NK cells, and suppresser T-lymphocytes than comparison subjects. Thus, across a variety of subjects, situations, and immunological measures, chronic stressors appear to have deleterious effects on the immune system. However, the effects have not typically been either strong or consistent. Unfortunately, up to this time, little attempt has been made to delineate the kinetics, nor have the health implications been carefully examined in disaster studies.

Daily Hassles

As noted with chronic stressors such as life events and disasters, the acute stressor literature such as life hassle also demonstrates relatively robust and consistent findings of generally reduced immune function in response to stress.

A favorite paradigm for examining immunological effects of acute stressors has involved the study of college or postgraduate students engaged in examinations. As early as 1950, several researchers had begun assessing the immunological effects of examination stress (Humphreys and Raab 1950). Examination and academic stress have also been associated with decreased immune function. In comparing psychiatric residents undergoing a

competitive qualifying examination to matched physician controls, Dorian et al. (1982) showed that residents displayed a depressed mitogen response before taking an examination and an elevated response two weeks thereafter. A prospective study of dental students found that salivary levels of immunoglobulin A, part of the first-line host defenses against upper respiratory disease, were significantly lower during three of the students' high-stress examination periods (Dorian et al. 1981). Halvorsen and Vassend (1987) measured the psychological and immunological status of 12 psychology undergraduates taking an examination and 11 control subjects. Pre-examination students demonstrated higher anxiety, greater self-reported distress and increased numbers of circulating monocytes. The results of the study revealed that examination stress was associated with declines in NK activity (Kiecolt-Glaser et al. 1984). Significant changes in antibody titers to herpes viruses are thought to reflect functional changes in cellular immunity systems (Henle and Henle 1982). For example, it has been noted that immunosuppressed patients (i.e. those with immunosuppressive illnesses or receiving immunosuppressive therapy) characteristically have elevated herpes virus antibody titers. Elevation in antibody titers is thought to reflect the inability of the cellular immune response to control the reactivation of viral products and infectious virus.

With regard to psychological variables, several studies have identified a relationship between loneliness and decreased immune function (Byun and Lieberman 1992; Glaser et al. 1987). Lonelier students had poorer immune function than their less lonely

counterparts. This represents an interesting finding, as it implies a potential role for personal relationships and/or social relations in affecting or buffering immune system changes. A study result of a cross-cultural study on examination stress and immune suppression showed that Anglo-American male graduate students had consistently lower s-IgA levels through three different academic phases than Anglo-American female and Asian-American male and female students. One of the surest reasons for the lower immune profile for Anglo-American male students was their loneliness due to a lack of male role models, of friendship with males, of interrelationships with females, and of a social support network, and also due to an increase in competition and in the social pressure required for manliness (Byun and Lieberman 1992).

A number of studies have examined the influence of examination stress on endocrine function. Hellhammer et al. (1985) studied ten healthy males taking final examinations in medicine or psychology. These authors found a relationship between salivary cortisol levels and examination stress, in which inadequate coping attempts were positively correlated with cortisol elevations. However, as cortisol levels were abnormally high in control (non-exam) subjects, this suggests that students may in fact represent a chronically stressed sample. In a similar study, Hudgens et al. (1989) found elevated cortisol levels both before and after an examination in 18 third- and fourth-year medical students. Prolactin levels, however, were elevated only during the pre examination period. Luteinizing hormone levels were negatively correlated with anxiety levels both before and after the

examination. The finding of elevated cortisol levels at both time points is suggestive of the experience of a more chronic stressor.

To summarize, there is substantial literature supporting the concept that stressful life-change events and life hassle stressors can result in altered endocrine system function and altered immune system function. Unfortunately most studies have been done in a laboratory setting or with individual life changes. This study looks at a number of life-change events in a naturalistic setting.

Culture-Bound Syndromes (CBS)

In recent years, awareness of cultural diversity and of the role of culture in all illness has greatly increased. Because of the insights into the relationship between individual psychopathology and culturally determined practices and beliefs that the study of the culture-bound syndromes provides, interest in these syndromes has grown exponentially in the past several years. I believe that it is likely to continue to grow and that further study of the culture-bound syndromes will continue to yield fresh insight into questions basic to all of medical anthropology. In this section I would like to review literature and introduce *Taijin Kyofusho*, a Japanese syndrome, and *Voodoo death*, an South-American and African syndrome in general. *Hwa-byung* (GJQUð), a Korean syndrome will be discussed in chapter 7.

The term culture-bound syndrome is used to denote any of certain recurrent, locality-specific patterns of aberrant behavior

and experience that appear to fall outside conventional Western psychiatric diagnostic categories. Most of these patterns are indigenously considered to be illness, and most have local names. Older and less frequently used terms that refer to more or less the same set of patterns are ethnic psychoses and ethnic neuroses (Devereux 1956), atypical culture-bound reactive syndromes (Yap 1974). Though examples of the major diagnostic categories of DSM-III-R (American Psychiatric Association 1987) and ICD-10 (International Classification of Diseases 1992) are ubiquitous (schizophrenia and bipolar illnesses, for example, being found throughout the world), any given culture-bound syndrome is found in one, or at most a few, of the world's societies.

Certain behaviors and experiences that are the signs and symptoms of the culture-bound syndromes occur in many unrelated cultural settings. However, in different cultural settings they may be interpreted, and thus experienced, in disparate ways. In culturally differing settings, they also may be sorted into quite different categories. These ways of understanding and of sorting are based, in large part, on locality-specific ideas of personhood, autonomy, vital essence, supernatural beings, illness, transgression, and health—in short, the matter and the forces that constitute the experienced universe. Therefore, it is important in considering any instance of a culture-bound syndrome to consider not only the elements of the presented behavior and observations that are significant in the Western scientific system, but also the elements that are considered important by clients. The culture-bound syndromes are especially clear examples of the need to explore

Cultural modes of investigation. As an ethnographer, he or she can accept a person's definition of his or her situation, and the likelihood of appropriate and effective intervention is vastly increased in their own cultural context.

Because there has been no single, agreed-upon, rigorous definition of culture-bound syndromes, the folk illnesses that have been considered such at one time or another differ not only descriptively but also conceptually. Most include some specific out-of-the-ordinary behaviors or experiences, but the symptoms of some are quite unspecified, like fatigue, worry, or inability to carry out ordinary routines. These latter folk illnesses are not unified by their constituent behaviors and experiences but rather by the attribution of a variety of unrelated debilitated states to some specific cause.

A number of authors have pointed out that recurrent patterns of culturally shaped aberrant behavior that are indigenously considered pathological but that have no place in official diagnostic taxonomies occur in Western as well as non-Western societies. These authors suggested that they be considered culture-bound syndromes of Western culture. Candidates for culture-bound syndrome status in the recent psychological anthropology literature include obesity (Rittenbaugh 1982), anorexia nervosa (Nasser 1988), the type A behavior pattern (Helman 1987), nerves (Davis and Whitten 1988), and petism (a single person, usually elderly, sharing a radically untidy household with a rather large menagerie of dogs or cats; Simons 1985). In every society there are culturally constructed patterns of behavior whose origins and expressions are

traceable to particular values and normative emphases. Moreover, people in every society categorize events, including episodes of illness and out-of-the-ordinary behavior. Thus, it is reasonable to examine the culture-bound syndromes found elsewhere in the world.

Taijin Kyofusho

Taijin is an adjective referring to interpersonal, and kyofusho means phobia or fear. The disorder is especially prevalent among young people. Sufferers experience their worst bouts of symptoms in interpersonal situations. Though some social anxiety for some persons is probably ubiquitous in the world's cultures, it has been suggested that it is especially frequent and debilitating in Japan because of the emphasis in Japanese culture on the importance of proper behavior and demeanor in all situations and social contexts (Tanaka-Matsumi 1979).

Voodoo Death

Though anecdotal evidence of Voodoo death abounds, it has been much debated whether people have actually died simply because they believed with certainty that someone else put a death spell on them (Cannon 1942). Also known by such terms as hex, root-work, and numerous other terms (in Spanish, *mal puesto*), belief in witchcraft—the power of other people to bring about misfortune, disability, and death through spiritual mechanisms—has been well-documented in human history. The common thread in its distribution appears to be a profound loss of hope, an engulfing sense of impotence, and an inability to change a foretold course of events.

CHAPTER 4

STATEMENTS OF PROBLEM AND STUDY PURPOSES

I would like to discuss possible problems of studies based on the theoretical discussion in chapter 2. The problem will concern how psychoneuroimmunology is associated with life-change stress and will especially focus on problems with psychological studies of disasters.

Problems in Life-Change Stress Studies

Nevertheless, even now, opponents and proponents strongly disagree on the value of this line of research. Critics not only disapprove of its theoretical foundations but also condemn the way in which both relevant variables (on the one hand, the life events, and on the other hand, the different indices of mental and/or physical health) are operationalized. It is beyond the scope of the present section to give an exhaustive enumeration of all problems that are identified in this research area. Alternatively, I would like to discuss two major problems which I thought important. One problem is the validity of life change instruments such as unreliable measurement devices, incompleteness of the item pool. Although it has to be noted that at present there is much debate on the dimensionality of structure and how to measure it, it cannot be

denied that in some studies impressive results have been reported. Many theorists criticize the study of life events in the tradition of Holmes and Rahe (1967), because it does not take into account the subjective evaluation of the event by the subject. To a large degree this subjective evaluation comprises what several investigators have pointed to important features, such as negative or positive, unexpected or anticipated, and controllability. Measuring health status also brings up many (conceptual) problems. Illness behavior, to mention one of the more important, and other factors can invalidate the conclusion that there is an association between life stress and illness.

The other problem in the study of life-change stress is the lack of scientific mechanisms for determining the relationships between physiological changes and the psychological changes due to life-change stress. Some scholars have seriously criticized the interpretation of self-report indicators used in life-events research (Rabkin and Struening 1976). Such measures have been confounded with several inconsiderable factors such as illness behavior and treatment seeking. It has been frequently suggested that studies of life-stress experience should incorporate objective indicators of bodily functioning along with the traditional self-report measures of illness (Pardine and Napoli 1983). As I presented in detail in chapter two, I feel that recent development of psychoneuroimmunology can provide valuable information to improve the reliability and validity of the questionnaires that measure life-change stress and health status. However, in the next section I will present the problems in the psychoneuroimmunological approach.

Problems in Psychoneuroimmunological Studies

Based on the literature reviewed in chapter two, it would be expected that an individual's hormone response might also change concomitant with a rise in stress. Stress hormones might rise as the stress worsens.

The immune system would probably be affected by these endocrine changes, with a down-regulation of the immune response. However, by Jerne's network hypothesis (1974), the immune system has its own counterbalancing self-regulatory system. This could cause the immune system to overshoot and lead to transitory immune enhancement before eventually modulating back and forth until it reaches equilibrium (much like the physical action of a spring).

Therefore, depending on at what time one attempts to assess these systems, different results could be obtained. At one time, we may see the typically reported high stress, high stress hormones, and suppressed immune response. At another time, it may be high stress and high stress hormone, but enhanced immune function. At still another time, there could even be high stress, low stress hormones, and enhanced or suppressed immune function.

The point is that no single indicator provides the true picture of this complex interrelationship. Instead, longitudinal studies with many data points for each of the different systems are needed to understand these processes. It will not be possible to understand

these systems until the time and effort is expended to carefully map out these interactions. Thus, the endocrine response to stress is a complex one and involves numerous feedback loops. This response is individualized with respect to stressors and may be modified by behavior, prior exposure, and coping responses. Because of its complexity and tendency to fluctuate, it is crucial that the endocrine-stress response not be conceptualized as a linear function. It is difficult to predict the kinetics of this response based on one or even several data points or hormonal measures. Thus, there is a critical need for further exploration of the kinetics of the endocrine response to stress in relation to psychological processes. In addition, Goldstein and Halbreich (1987) offer another opinion, arguing that stress should not be defined by hormonal response. These authors correctly point out that a situation can be quite stressful without concomitant increases in stress hormones. Conversely, an increase in stress hormones does not always indicate the impact of the stressor. It would seem that much could be gained by assessing psychological responses and interpretations to ultimately define and quantify stress, while still utilizing hormone response profiles to assist in the categorization and specificity of stressors. It is clear that unitary concepts of stress are unrealistically simple. It needs to explore more comprehensive constructions.

A recent application of saliva in psychoneuroimmunology has generated a new wave of excitement, principally due to the ease and noninvasive with which saliva can be collected. The excitement is particularly great among researchers for whom blood or urine

collection is impossible, inappropriate, or unwise. This include those conducting behavior studies in which venipuncture would represent an unacceptable psychological stress and catheterization an unacceptable restraint, or field studies in remote settings or under primitive technological conditions. The use of whole s-IgA in psychoneuroimmunology research has recently been criticized (Stone et al. 1987). One problem is that, whereas concentrations of IgA protein in saliva decrease with increased flow (as occurs during autonomic arousal), its rate of synthesis increases when salivary flow is stimulated with lemon drops. Another problem is that saliva contains, in addition to IgA protein, an enzyme that degrades it. Finally total IgA may be a poor measure of immune function because only 1% of IgA protein becomes antibody under challenge. Stone et al. (1987) recommend measuring antigen-specific antibodies produced in response to stimulation with rabbit albumin, the measure used in their study. These allegations have been countered (Jemmott and McClelland 1989). Setting aside arguments concerning the consistency of results obtained - even if they were consistent, Stone et al (1987) had argued that they could be artificial, and even if there were not consistent, this in itself would be insufficient reason for discarding the measure - Jemmott and McClelland responded to each of the three arguments presented by Stone et al. (1987). First although Jemmott and McClelland did not dispute the charge that salivary IgA levels are inversely related to flow rate, they cited two studies in which the same results were obtained using each of two IgA measures, resting concentrations and secretion rate. Lemons drops or other stimulating agents were not

used. Furthermore, the expected effects of stress-induced slowing of salivary flow on IgA concentrations is opposite to the one found: IgA concentrations should be higher under stress, not lower. With respect to the second argument, that salivary IgA is degraded during or following collection, Jemmott and McClelland argued that the degradation is unimportant in magnitude. S-IgA is remarkably stable and therefore well suited to function in protease-containing external secretion such as whole saliva. S-IgA levels are stable over time (Brandtzaeg 1989) and have been shown to be related to true illness (Parker 1990; Rossen et al. 1970). Furthermore, IgA levels in saliva collected from a single gland, the procedure recommended by Stone et al., has not been validated in this way. Jemmott and McClelland claimed that examining stimulated, antibody specific s-IgA is likely to produce results with low generalizability, particularly when the antigen is rabbit albumin. Total s-IgA may be more relevant to upper respiratory infection, which is caused by a multiplicity of pathogens, and total s-IgA has in fact been linked with actual illness outcomes.

Some investigators have tried to avoid this problem by reporting s-IgA in mg/100 mg of total protein. However, Brandtzaeg (1989) argued that this is not appropriate as the secretory response of individual parotid proteins is quite different. The profile of total salivary protein is largely influenced by the concentration of amylase. Relating the level of salivary IgA to the level of total protein is hence no comparison for the influence of flow rate but rather adds to the confusion. Despite these

disadvantage, whole saliva is commonly used as a representative external secretion because it is easily obtained.

What can be reasonably concluded at this point is that (a) secretory rates of salivary IgA not gustatorily stimulated are preferable to stimulated measures or measures taken at a single point in time and (b) multivariate analysis is recommendable such as measuring stress hormone (cortisol), standardized psychometrics, and health data. The incidence of upper respiratory infection, ought to be collected in psychoneuroimmunologic studies using this measure. Further, anthropological cultural information specially, studies in multicultural societies should consider as a critical variable to confirm the psychoneuroimmunological profiles of stress related immune suppression in a certain context.

Problems in Disaster Studies

As I presented in chapter 2, there are discrepancies among disaster studies. One possible reason for the discrepancies among studies might be a lack of distinction between the personal or property-damaged innocent victims of the riots and rioters who may experience an elated cathartic effect and/or group cohesion. Most studies of urban riots have not clearly examined this point. A second reason for the discrepancy is that some studies focus on the dominant phenomena of a population's behavior while others focus on the underlying facts of individual psychology. Some studies are insensitive to sociocultural differences in the riot-affected

populations. Another factor contributing to different findings is the time at which the research is conducted. Many studies have been carried out long after the disaster when the expression of psychological states has been transformed into cultural norms and values. Also, most of these studies are cross-sectional rather than longitudinal, lacking a control group or a pre-disaster baseline. Furthermore, studies from the 1960's and 1970's failed to recognize the signs and symptoms of post-traumatic stress disorder now widely recognized to occur under a variety of circumstances (Davidson and Baum 1986; Solomon and Flum 1988; American Psychiatric Association 1990).

From this problem statement, many of the foregoing problems are avoided in the present study, which incorporate a clear distinction between rioters and victims. This study is also longitudinal in design (six weeks, six months, on 12 months after the riots), includes both psychological (mental) and neuroimmunological (physical) measures of stress, and interprets these results in appropriate sociocultural contexts. The distinction between property-damaged victims and non-property-damaged victims is very important to clarify psychological effects due to the riot compared to general depression, since Korean-Americans were reported to have the highest depression rates among Asian-Americans (Kuo 1984). The other reason is that, under the stress of riot, those who had a previous psychiatric history tended to be readmitted to hospitals (Lyons 1971).

From the problem statement, the purposes of this study are three-fold: 1) I document the effects of the riots, a social disaster,

on the mental and physical health of Korean-American victims; 2) I relate psychophysiological profiles of salivary cortisol and s-IgA using unstimulated whole saliva as indicated on self-reported responses to questionnaires on life-change events, somatization, loneliness, and depression. I attempt at first to apply chemical profiles of victims in social disaster studies to investigate physical and psychological health using a longitudinal study; 3) this study sheds light on how ethnic differences exacerbate the mechanisms by which stressful social events affect the human mind and body. In particular this study will provide a possible explanation of the mechanism by which social distress suppresses the immune system by activating the nervous system.

CHAPTER 5

THEORETICAL STUDY MODEL AND HYPOTHESES

The theoretical model of this study is based on the biocultural paradigm of medical anthropology (McElory and Townsend 1989). Traditionally, medical anthropologists have focused on human behavior and beliefs related to human health and illness rather than on the social and institutional health care systems, especially among minority populations (Foster 1974).

According to the biocultural model, the environment is composed of abiotic, biotic, and cultural factors that act as stressors or constraints to the human host. The cultural environment (cultural ecology) consists of the sociopolitical organization, ideology, and subsistence technology. The biocultural paradigm in medical anthropology looks at how cultural stressors affect the human host at the population, individual, and sub-individual levels. Using this biocultural paradigm, this study considers the riots as socioeconomic disorganizational stressor at cultural ecological level, as a massive stressful life-change events at individual level, and as a chronic neuroimmunological reaction to life-change stress at the sub-individual level affecting the human host health (property-damaged victims). Indicators of stress are composed of life-change events, changes in behavior, changes in emotions, and changes in cortisol and s-IgA profiles.

Figure 5-1 illustrates a hypothesized model that can be used to understand how social, psychological, and biological domains might theoretically be related to immune dysfunction following stressful life-change events, recognizing that the paths among these psychosocial and psychoneuroimmunological domains are certainly more complex than what is shown. In addition, the positive causal pathways between these domains which result in immune changes or potential development of disease during stressful life-change events are not yet characterized and have been only tentatively constructed using longitudinal studies. This model hypothesizes that stressful life-change events in the social environment such as social support and coping, act through individual adaptation to produce changes in the endocrine and immune systems. Alterations in psychological adaptation, as measured by symptoms of mood disorder such as anxiety, anger, fear, and/or depression, mediate changes in neuroendocrine and autonomic efferent pathways from the brain to alter immune function. Decrements in immune function are then assumed to be related to increased disease susceptibility and changes in health outcome. Under this model, property-damaged victims who experienced high life-change events with neuroendocrine and/or immune system changes would be expected to have the higher frequency of somatization.

In this model, I hypothesize that 1) there is no group difference through time in psychosocial-neuroimmunological profiles between property-damaged victims and non-property damaged victims; 2) there is no phase difference in

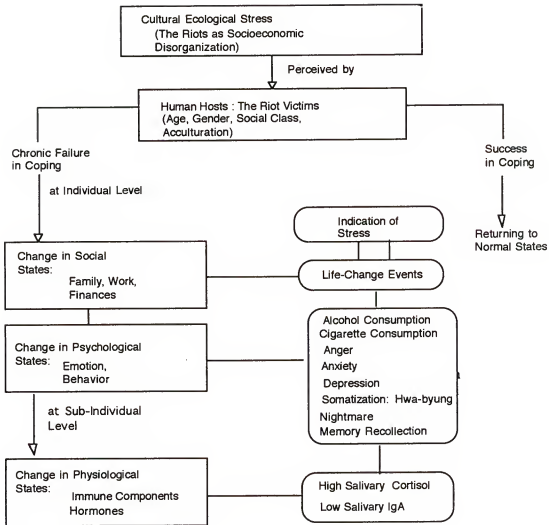


Figure 5-1
Theoretical Model for Psychosocial-Neuroimmunological
Changes in Korean-American Riot Victims

psychoneuroimmunological profiles; 3) there is no psychoneuroimmunological profiles by the degree of life-change events. If these hypotheses will be rejected, this model provides a systematic approach to the assessment of PNI relationships in the development of a physical illness related to property damage. Positive findings from this type of investigation would have important implications for individuals with psychosomatic illnesses. However, if these hypotheses were accepted, negative findings are also of importance, since there is a strong popular belief that psychological states influence the development and/or course of physical illness.

CHAPTER 6 STUDY MATERIALS AND METHODS

Study Subjects

From June 14 to June 24 of 1992 (six weeks after the riots) and December 23 of 1992 to January 3 of 1993 (six months after the riots), and April 29 to May 10 (12 months after the riots) of 1993 after the Los Angeles riots (April 29 to May 3, 1992), opportunistic samples of Korean-American victims were surveyed in Koreatown, Los Angeles. In June 1992 one hundred ninety-four victims (126 property-damaged victims and 68 non-property-damaged victims) were investigated. Fifty-nine victims (32 property-damaged victims, 27 non-property-damaged victims) in December 1992 and one hundred fifteen (59 property-damaged victims, 56 non-property-damaged victims) in April of 1993 were investigated. The numbers of respondents were reduced during the second and the third surveys, which was mainly due to changes in residence (about 25% of respondents moved either within the same area or to different areas during the year survey). About 30% of the first survey respondents participated in the second survey and about 95% of the first survey respondents participated in the third survey. Two groups were formed based on self-reported status as property-damaged victims or non-property-damaged victims. Later, the property-damaged

victims were verified by name on the list of the Association of the Korean-American Victims of Riots in Los Angeles. All interviews were conducted in Korean and/or English, and questionnaires, consent forms and other written materials were translated from English to Korean. Unstimulated whole saliva samples were collected at the time of the interview.

Table 6-1
The Number of Survey Participants

Phases	No. of Vict.	No. of Nonvict.	Total No.
6 Weeks	126	68	194
6 Months	32	27	59
12 Months	59	56	115

Vict.=Property-damaged victims

Nonvict.=Non-property-damaged victims

Saliva Samples

Before collecting the samples, participants first rinsed their mouth with cold water and waited at least 15 minutes after eating to get rid of blood and food contamination (Riad Fahahmy et al. 1984). To minimize variation caused by circadian rhythms, collections were done at about 12-3:00 p.m..

During the first survey, unstimulated five to ten ml saliva were collected in 50cc polyethylene collection tubes in the field.

Samples were immediately treated with sodium azide as a bacteriostatic agent, frozen, air transported to Florida, and stored at -70 degree C.

During the second and third survey, Collection tubes were pretreated with sodium azide. The corresponding amounts of sodium azide dissolved in distilled water, evaporating off the water and leaving a crystalline residue in the bottom of the tube to be dissolved in the saliva when collected and stored at -70C.

Self-Rating Psychometric Questionnaires

The frequency of life-change events were determined by a scale modified from the Recent Life-Change Questionnaire (Holmes and Rahe 1974). The frequency of somatization was determined by a scale modified from the Symptom Checklist-90 (Derogatis 1977), and the degree of loneliness was assessed from the UCLA Loneliness Scale (Russell 1980). The depression scores were assessed from The Center for Epidemiologic Studies-Depression Scale (CES-D). For this study, an advantage of CES-D was that it was relatively less affected by the bias of culturally conditioned responses (Radloff 1977). The reliability and validity of the CES-D have been demonstrated as screening tools for detecting depressive symptoms among Korean Americans in Chicago (Hurh and Kim 1988).

Laboratory Analysis

Secretory immunoglobulin A (s-IgA: antibody) in saliva levels were assayed blindly and duplicated using the single radial immunodiffusion assay technique (Mancini et al. 1965). Cortisol levels were determined using a serum radioimmunoassay kits purchased from INCSTAR Corporation, MN, U.S.A. and modified according to Aakal-Ansari et al. (1982) for saliva.

Single Radial Immunodiffusion for s-IgA Assay

Preparation of the agar-antiserum mixture. The required amount (1g/100ml phosphate buffered saline) of solidified agar-gel was melted in a microwave oven. The suspension was boiled and mixed for 3-4 minutes until all the agar had dissolved. Distilled water was added to replace losses due to evaporation and the solution was allowed to cool down to 56 degree C in a water-bath. Fifty microliters of goat antiserum to human alpha chain (Calbiochem) was added per 10 ml of agar. The antiserum-agar mixture was poured, without delay, into the center of hydrophilic side of plastic plates (Gel-Bond, FMC) using a warmed pipette to make an even surface thickness plate. After solidification (2-3 mins), plates were placed overnight or at least 30 mins in a cool and humidified environment.

Filling wells. Holes were punched to make 40 wells per plate and were filled with centrifuged saliva samples (as an antigen for this experiments) and standard s-IgA. Seven microliters of five

reference concentrations of standard s-IgA (500, 250, 125, 62.5, 31.25ug/ml) and the saliva samples were dispensed in duplicate. The plate was incubated at 4 degree C for at least 48 hrs.

Staining and measurement of the size of the precipitates. The ring-shaped precipitates which form around the antigen wells grew in size during a few days (24-48 hrs), after which no further increase in dimensions was observed. The final records were made when the precipitates might be assumed to have reached their final size (48 hrs). After rinsing plates with distilled water and drying at room temperature, the plates were stained by immersing for 30 minues in an aqueous solution of 1% w/v Thiazine Red in 7% acetic acid. The background color was removed by three successive baths of solution containing 7% v/v acetic acid. A magnifying overhead projector were used for measuring precipitate ring diameters (as an indicator for the amount of s-IgA concentration in saliva). A reference curve was constructed by plotting the square of the ring diameters of the reference sera against their concentrations.

Radioimmunoassay for Cortisol

The principle of the method of the GammaCoat (125I)Cortisol Radioimmunoassay Kit procedure was based on the competitive binding principles of radioimmunoassay. Standards and unknown duplicated samples (50ul per each tube) were incubated with a cortisol tracer in antibody-coated tubes when the antibody was immobilized onto the lower inner wall of the GammaCoat tube. The

incubation time was 90 minutes sitting in preheated to 37 degree C in the water bath. A standard curve was prepared with five serum standards ranging from 0 to 60ug/dL. Unknown values were interpolated from the standard curve. The entire assay was performed in the coated tube. No separate sample dilution, protein extraction steps were required for saliva samples.

Statistical Analysis

The Systat 5.1 program, t-test and multivariate analysis of variance (MANOVA) were used to determine group differences. Stepwise regression was used to predict the surest variables. Paired t-tests were used for phase differences. Pearson's correlation and multiple regression were used to assess the relation between the salivary profiles and the psychometric scales. The significance level was set at $p < 0.05$. Deltagraph Professional and Fullpaint were used for graphics.

CHAPTER 7

RESULTS

The results of the psychosocial-neuroimmunological profiles as compared with groups and phases and the finding of culturally-bounded stress syndrome will be presented. The results of the questionnaires and saliva profiles were analyzed in the following ways: 1) because there was no significant phase difference in demographic characteristics, only the demographic characteristics at the six weeks after the riots will be represented; 2) group differences in psychosocial-neuroimmunological profiles between property-damaged victims versus non-property-damaged victims will be presented as comparisons of those of six weeks, six months, and 12 months after the riots; 3) phase differences in psychosocial-neuroimmunological profiles will be documented; 4) because there was no significant phase difference in the frequency of life-change events, the nature of life-change events at the six weeks after the riots will be represented; 5) since the correlation between self-reported psychometrics and chemical profiles was consistent through phases, the correlation at the six weeks after the riots will be represented; 6) group difference in depression scores at six months after the riots will be presented. Since there was no significant group difference in loneliness scores, the data will not be presented in this chapter.

Demographic Characteristics of Victims

General characteristics of the property-damaged victims and non-property-damaged victims were similar except for their present occupational conditions. About 90% of property-damaged victims who were previously business owners were jobless due to the riot at six weeks after the riots damage. About 35% and 15% were jobless at six and 12 months after the riots. About 45% were rebuilding firms at the time of the third survey. The average length of time that businesses destroyed by rioting had been in business was 7.6 years. The mean age of the respondents was 47.2 years for property-damaged victims and 47.8 years for non-property-damaged victims. All respondents immigrated to the United State of America after 1970. Mean years of residence in the U.S. of America was over 10 years. All respondents are the first generation immigrants and over 50% are American citizens. Average work hour was 13.6 hours per day. Over 30% of respondents were home-shop (small business) owners who resided, as well as had their businesses, in the riot-torn areas of Koreatown. Over 10% of them use anglicized first names and over 80% of them are Christians. Over 60% of them had more than 3 to 4 years college degree. About 80% of victims spoke Korean language at home (Table 7-1).

Table 7-1
Demographic Characteristics of Victims

Characteristics	Property-Damaged Vict.	Non-Property-Damaged Vict.
Age	47.2yr	47.8yr
Gender: Male	56.8%	48.7%
Marital Status:		
Married	76.8%	80.4%
No. of Children	2.0	1.9
Home-Shop Address:		
Riot Area	30.1%	31.2%
% Immigrated:		
Since 1970	100%	100%
Length of Immigration	11.72yr	13.16yr
1st Generation Immigrant	100%	100%
Present Job:		
Jobless	91.1%	64.5%
Length of Previous Job	7.6yr	8.1yr
Work Hours/Day	13.6hrs	10.4hrs
No. of Social Support:		
Church+Family	90.2%	94.3%
Religion: Christian	84.6%	87.5%
Angliciz. of Fir. Name	13%	12.1%
American Citizenship	54.2%	59.2%
Language Spoken at Home:		
Korean only	91.7%	92.4%
Education:		
More than College	67.9%	60.3%

Psychosocial-Neuroimmunological Findings

Group Differences in Self-Rating Psychometric Measurements through All Phases

There were significant group differences in the frequency of total life-change events and of somatization at all three phases between property-damaged victims and non-property-damaged victims. There were significant phase differences in the frequency of somatization. These trends peaked at six-months after the riots. However, there were no phase differences in non-property-damaged victims in all variables. The frequency of life-change events of property-damaged victims compared to non-property-damaged victims was 4.65 times greater at six weeks, 4.6 times greater at six months, and 4.41 times greater at 12 months after the riots than those of non-property-damaged victims. The frequency of somatization in property-damaged victims was 2.20 times greater at six weeks, 3.95 times greater at six months, and 4.90 times greater at 12 months after the riots than that of non-property-damaged victims. The frequency of somatization was significantly different through all three phases ($p < 0.05$ in all) in property-damaged victims. Mean value of somatization peaked at six-months after the riots. The mean value of somatization at 12 months was still higher than those of six weeks after the riots. The frequency of life-change events followed the same trend as those of somatization, however, it did not reach a significance level (Tables 7-2, 7-3; Figures 7-1, 7-2).

Table 7-2
Group Differences in the Frequency of Life-Change Events
and the Frequency of Somatization at All Phases

Variables	Group	N	Mean	SEM	T
6 Weeks					
Life-C. Events	Vict.	58	6.48	0.38	
	Nonvict.	44	1.39	0.23	-11.37*
Somatization	Vict.	36	4.36	0.48	
	Nonvict.	41	1.98	0.29	-9.96*
6 Months					
Life-C. Events	Vict.	33	6.84	0.35	
	Nonvict.	25	1.48	0.27	-12.13*
Somatization	Vict.	21	6.52	0.67	
	Nonvict.	29	1.65	0.28	-14.06*
12 Months					
Life-C. Events	Vict.	44	5.86	0.65	
	Nonvict.	40	1.33	0.18	-12.07*
Somatization	Vict.	32	4.41	0.73	
	Nonvict.	29	1.90	0.36	-3.78*

*p<0.0001

Vict.=Property-damaged victims

Nonvict.=Non-property-damaged victims

Table 7-3
Significant Phase Differences in Phsycosocial-neuroimmunological
Profiles in Property-Damaged Victims

Variables	N	Mean Diff.	SD Diff.	Paired T
Life-C. Events (freq.)				
Phase 1x2	33	-0.72	2.36	-1.77
Phase 2x3	33	-0.97	3.62	-1.54
Phase 3x1	44	-0.29	2.75	-0.71
Somatization (freq.)				
Phase 1x2	21	4.09	2.44	7.67***
Phase 2x3	20	2.50	4.38	2.55*
Phase 3x1	23	6.01	3.39	8.63***
Cortisol (ug/dl)				
Phase 1x2	27	-0.68	0.50	-7.13***
Phase 2x3	34	0.45	0.71	3.74**
Phase 3x1	29	-0.21	0.54	-2.11*
s-IgA (ug/ml)				
Phase 1x2	34	102.37	124.63	7.60***
Phase 2x3	34	-58.547	82.87	-4.119***
Phase 3x1	38	94.86	139.27	4.20***
*P<0.05				Phase 1=6 Weeks
**P<0.001				Phase 2=6 Months
***P<0.0001				Phase 3=12 Months

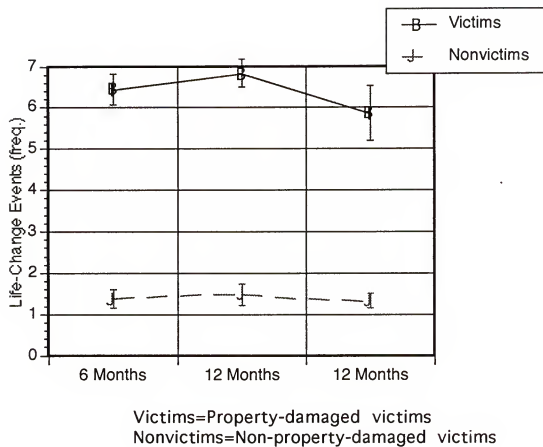


Figure 7-1
No Significant Phase Difference in the Frequency of
Life-Change Events in Both Groups

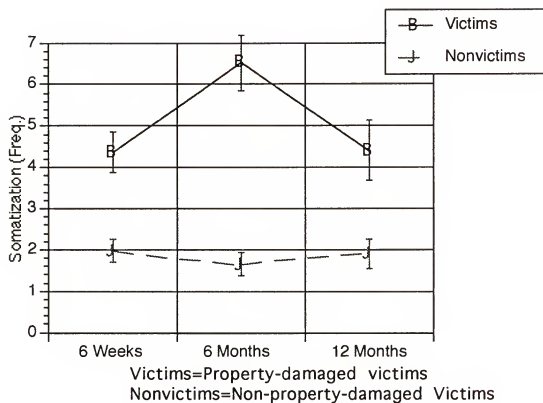


Figure 7-2
Significant Group Differences in the Frequency of Somatization and
Phase Differences of Somatization in Property-Damaged Victims

Group Differences in Neuroimmunological Profiles through All Phases

There were significant group differences in neuroimmunological variables at all three phases between property-damaged victims and non-property-damaged victims. There were significant phase differences in all neuroimmunological variables in property-damaged victims. There was no significant phase difference in non-property-damaged victims in all variables. The level of cortisol peaked at six months and decreased at 12 months after the riots which was still higher than those of six weeks after the riots. On the contrary, the lowest s-IgA levels were reached at six months and increased at 12 months after the riots.

The mean value of cortisol level was 2.08 times higher at six weeks, 2.30 times higher at six months, 2.15 times higher at 12 months after the riots in property-damaged victims than those of non-property-damaged victims. Mean s-IgA levels were 2.18 times lower at six-weeks, 4.60 times lower at six-months, and 3.76 times lower at 12-months after the riots in property-damaged victims than those of non-property-damaged victims (Table 7-4, see also Table 7-3; Figures 7-3, 7-4).

Table 7-4
Group Differences in Cortisol and s-IgA Level at All Three Phases

Variables	Group	N	Mean	SEM	T
6 Weeks					
Cortisol	Vict.	72	0.44	0.03	
(ug/dl)	Nonvict.	43	0.21	0.02	-5.91*
s-IgA	Vict.	81	245.06	14.59	
(ug/ml)	Nonvict.	45	533.55	32.13	8.16*
6 Months					
Cortisol	Vict.	32	1.06	0.08	
(ug/dl)	Nonvict.	26	0.46	0.04	-6.59*
s-IgA	Vict.	34	96.31	6.26	
(ug/ml)	Nonvict.	23	466.24	18.10	19.31*
12 Months					
Cortisol	Vict.	41	0.58	0.07	
(ug/dl)	Nonvict.	33	0.27	0.03	-3.95*
s-IgA	Vict.	39	159.37	10.53	
(ug/ml)	Nonvict.	23	509.89	24.01	13.37*

*P<0.0001

Vict.=property-damaged victims

Nonvict.=non-property-damaged victims

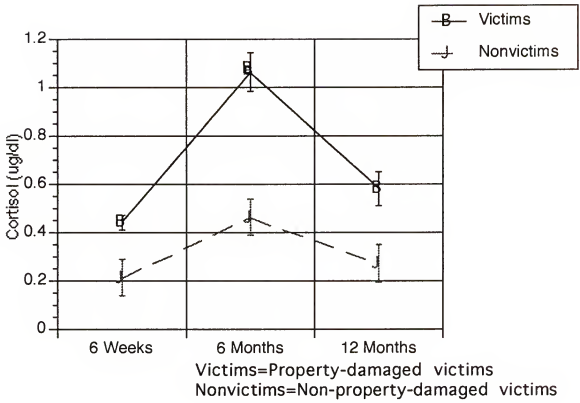


Figure 7-3
Significant Group Differences and Phase Differences
in Cortisol Levels in Property-Damaged Victims

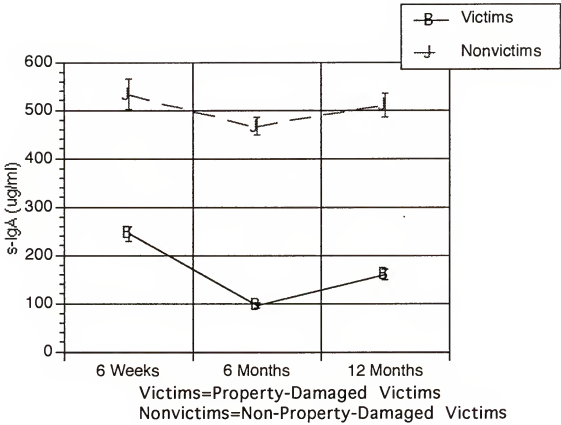


Figure 7-4
Significant Group Differences and Phase Differences
in s-IgA Levels in Property-Damaged Victims

Relationships between the Self-Rating Psychosocial Variables and Neuroimmunological Profiles

There was a strong significant linear correlation between life-change events and somatization ($r=0.51$; $p<0.0001$) and cortisol levels ($r=0.39$; $p<0.0001$) in all groups at six-weeks after the riots. There was a significant inverse relation between s-IgA and cortisol levels ($r=-0.33$; $p<0.05$; Figure 7-5) and between s-IgA and the degree of somatization in all groups ($r=-0.30$; $p<0.05$).

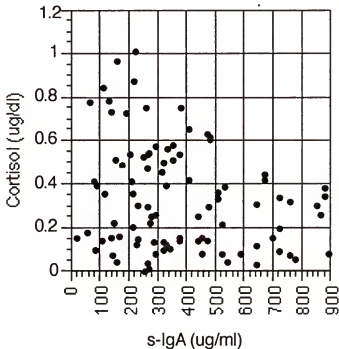


Figure 7-5
Significant Inverse Relationship between Salivary Cortisol
and Salivary IgA Levels at Six Weeks after the Riots

The Nature of Life-Change Events of Victims

There were one hundred two completed interviews which met these criteria for inclusion in this analysis. The degree of life changes was weighted as follows:

Life-C. Event	Degree	No.	%
0-1	Low	28	27.45
2-6	Moderate	36	35.29
7-11	High	38	37.25

Property-damaged victims (n=67) experienced more than two cases of stressful life-change events (Mean=6.5) excluding change in property. Non-property-damaged victims (n=35) experienced less than two cases of life-change events (Mean=1.4) which were correspondent to the low degree-life change group. In property-damaged victims the highest frequency of life-change event was financial changes (64.77%) such as losing their income, their credit-rating, and their investment opportunities. The second most frequent event was changes in work (53.93%) resulting from property damage such as total business destroyed or injured by the rioting. The major life-change events (85.56%) in non-property-damaged victims was decreased incomes (data not shown). About 25% of the respondents moved their homes and families to the same area or to a different area. About 30% of respondents experienced

sleeping difficulties and reduced recreational activities. About 15-20% of them experienced excessive drinking and smoking habits after the riots (Table 7-5).

Table 7-5
The Nature of Stressful Life-Change Events in Victims

Life-C. Events	N	%
Health:		
Hospitalization	4	4.65
Drinking Habit Change	15	17.05
Smoking Habit Change	11	13.1
Sleeping Habit Change	25	29.07
Recreation Habit Change	26	29.55
Work:		
Total Loss (Arson)	17	19.10
Injured	31	34.83
Residency:		
Move within the Same Area	15	18.07
Move to a Different Area	5	6.02
Finances:		
No/Decreased Income	52	59.09
Invest./Credit Diff.	5	5.68

Relationship between Stressful Life-Change Events and Psychological Profiles

There were significant positive relationships between the frequency of somatization and cortisol levels, and life changes in work, residency, and finances, while there were inverse relationships with s-IgA levels at six weeks after the riots. For Korean-American victims of the riots, change in residency was perceived as the most stressful event, ($r=0.46$; $F=17.29$; $p<0.001$) followed by change in work ($r=0.37$; $F=10.26$; $p<0.001$) (Table 7-6, 7-7).

Table 7-6
Pearson's Correlation Matrix of Life-Change Events
and Psychoneuroimmunological Profiles

	Business	Residency	Finances
Cortisol	0.37*	0.46*	0.31**
s-IgA	-0.57*	-0.46*	-0.46*

* $p<0.001$

** $p<0.05$

Table 7-7
Stepwise Regression on Cortisol Profiles to Predict
the Most Stressful Life-Change Events

Life-C. Events	Partial Corr.	F
Step 1 Change in Residency	0.46	17.29*
Step 2 Change in Work	0.37	10.26*

* $p<0.001$

Group Differences in Behavior Changes

There were significant group differences in health behavior changes after the riots measured by yes/no questions using health items of the life-change event scale. Major changes occurred in drinking, smoking, sleeping, and recreational habits (Table 7-8).

Table 7-8
Group Differences in Behavioral Habits by
the Degree of Life-Changes Events

Group	N	Mean	SEM	F
Change in Drinking Habits				
Low	28	0.00	0.00	28.14*
Moderate	36	0.03	0.03	
High	38	0.45	0.09	
Change in Sleeping Habits				
Low	27	0.00	0.00	43.64*
Moderate	36	0.07	0.05	
High	38	0.33	0.09	
Change in Smoking Habits				
Low	28	0.00	0.00	15.26*
Moderate	36	0.20	0.07	
High	38	0.33	0.09	
Change in Recreational Habit				
Low	28	0.04	0.04	28.53*
Moderate	36	0.23	0.08	
High	38	0.60	0.09	

*p<0.001

Group Differences in Psychological Profiles by the Degree of Life-Change Events

There were significant group differences in somatization ($p<0.001$), cortisol levels ($p<0.001$), and s-IgA levels ($p<0.001$) in comparison of lower, moderate, and high life -change groups. The frequency of somatization and s-IgA levels were greater in the low-degree-of-life change group and cortisol levels were greater in the high-degree-of-life change group (Table 7-9).

Table 7-9
Group Differences in Psychoneuroimmunological Profiles
by the Degree of Life-Change Events

Variables	N	MEAN	SEM	F
Somatization (freq.)				
Low	28	1.70	0.35	
Moderate	36	3.00	0.53	
High	38	4.45	0.53	18.53*
Cortisol (ug/dl)				
Low	28	0.22	0.03	
Moderate	36	0.31	0.04	
High	82	0.44	0.05	13.74*
s-IgA (ug/ml)				
Low	28	592.91	44.59	
Moderate	38	375.69	32.20	
High	38	234.31	21.22	32.88*

* $p<0.001$

Correlation between Psychological Profiles to Life-Change Events

There were strong linear correlations of cortisol, s-IgA, and the frequency of somatization to life-change events. Cortisol levels and the frequency of somatization increased, while s-IgA levels decreased as the degree of life changes increased in all groups. The unit of Cortisol was changed from ug/dl to ug/ml and the frequency of somatization was multiplied by 100 (Figure 7-6).

Group Difference in Depression Scores Six Months after the Riots

There was a significant group difference in depression scores six weeks after the riots between property-damaged victims and non-property-damaged victims. The depression scores of property-damaged victims were 1.29 times greater than those of non-property-damaged victims ($t=2.25$; $p<0.05$; Figure 7-7). Property-damaged victims' depression score was 1.29 times higher than that of non-property-damaged victims. There was a significant correlation between depression scores and neuroimmunological variables. The correlation coefficient of depression with cortisol was 0.41 and with s-IgA was -0.29.

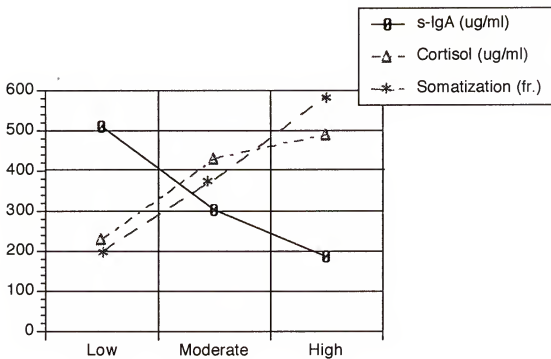


Figure 7-6
Significant Linear Relationships of Psychoneuroimmunological Profiles to the Life-Change Events at Six Weeks after the Riots

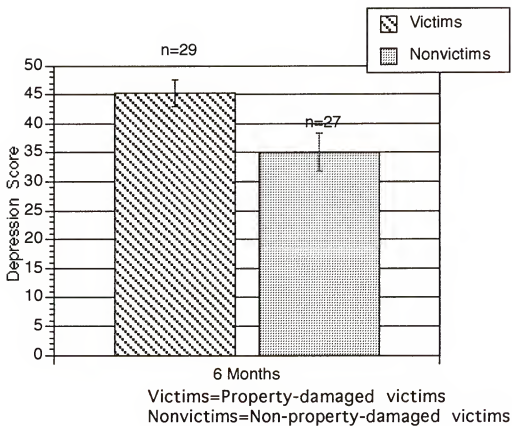


Figure 7-7
Significant Group Difference in Depression Scores
at Six Months after the Riots

Cultural Findings of Hwa-byung (G|Quð)

This section presents how Korean-American victims expressed their feelings related to riot damage and how to diagnose their health problems related to these feelings.

Among the property-damaged victims, I found mostly hwa-byung (G|Quð) due to extreme anger and shame originating from the ethos of hahn (GKB) which referred to unresolved precipitated anger related to victimization or to unfair treatment.

During the surveys I noticed that Korean-American victims rarely complained of anxiety, depression, or other psychological problems in a verbal way except anger and somatic complaints. Feelings of scapegoating, of abandonment by mainstream society in the failure of protection, and of hopelessness and helplessness to rebuild businesses created extreme anger and physical illness among property-damaged victims.

I found that property-damaged victims complained mostly of cardiovascular and gastrointestinal disorders such as hypertension, back pain, upper respiratory infection, dizziness, severe dry mouth, shortness of breath, heart problems, stomach upset, especially upper gastric pain called gasum-ari (rk TMâ dk ñ, broken heart illness) and insomnia. When victims were asked what they knew about the nature of this disorder, most of them answered that it develops as a result of bearing and suppressing hwa (G|, fire, anger, resentment) for a long time. Some victims explained the etiology as follows: a

mass is formed in the chest, and fire (heat) is generated in the chest, heart, or liver as a result of suppressing the feelings of hwa (G) for too long. The major symptoms of hwa-byung (G) Quô are cardiovascular and gastrointestinal disorders such as hypertension, back pain, upper respiratory infection, dizziness, severe dry mouth, shortness of breath, and heart problems. Noticeably, many female victims complained of amenorrhea which might be due to suppressed reproductive hormones by a high secretion of cortisol related to riot distress (Harrison 1986). However, this finding needs to be further investigated to prove a negative effect on reproductive competence due to riot distress.

Unexpectedly, most Korean-American victims were not angry at African-Americans but rather were sympathetic to the African-American situation in the ghetto area. Their anger was focused at the mainstream society, because of the failure of protection during the riots and neglect to the repair of damaged property after the riots. This cultural finding was later supported by the law suit against government for the failure of equal protection claimed by the Association of Korean-American victims of the L.A. Riots (Association of Korean-American Victims of the L.A. Riots 1993). According to a report from the Los Angeles Korea Times (Jan. 7, A4, 1994), to date only six out of 200 damaged liquor stores have been rebuilt due to negligence in the repair of damaged property.

Korean-American victims also argued that the media from mainstream society created in part, Korean-African racial conflict as they showed the video film in an incorrect way, in which a Korean-American woman, Du Soon Ja was shooting an 18 year-old

girl, Nathacia Hallins, when she attempted to steal a bottle of juice. According to Korean-American victims' arguments, there was strong evidence to consider the shooting as a self protection for Du Soon Ja. However, the media showed only the spot where Du was shooting the girl. In the video tape before Du shot the girl, the girl attacked Du four times and Du fell on the floor each time. Finally Du decided to shoot the girl who was turning her back away from Du (the author houses the video tape).

CHAPTER 8 DISCUSSION

This discussion of the results of this study focuses on three different areas; 1) demographic characteristics and stress; 2) psychoneuroimmunological response to stress; 3) and the findings of culturally bounded stress syndrome, hwa-byung (G] QU@).

Demographic Characteristics and Stress

The investigative sample was representative of Korean-American riot victims in Los Angeles. The mean age, gender, number of family members, and religion of respondents in this study were similar to those mentioned in a report about the economic damage of Korean-American victims eight months after the riots (the Korean-American Inter-Agency Council 1992). Over 90% of property-damaged victims in my study became jobless six weeks after the riots. The percentage of jobless was drastically reduced as the study progressed: About 15% were jobless at 12 months after the riots. About 65% were on reopened jobs at 12 months after the riots. These findings were comparable to the report of the Korean-American Inter-Agency Council. According to their findings, 55.6%

of the victims had opened new businesses by eight months after the riots. All of the respondents were first-generation immigrants who moved to America after 1970. Over 60% of them had more than 3 to 4 years of college education. They were among the third wave of immigrants originating from the well-educated middle class of urban Koreans (Hurh and Kim 1988; Kim 1993; Yu 1982). There are over 300 Korean-American ethnic churches in Los Angeles, and in this study over 80% of respondents to this study were church-goers. Previous studies showed that church participation has become a way of extended family life among the Korean immigrants in America, acting as a source of comfort and support, and contributing to spiritual and psychological satisfaction (Hurh and Kim 1990b; Kim 1993).

This study found that stress related to psychological measures was independent of age, gender, marital status, religion, type and length of occupation, length of residence in the U.S., the amount of social support, the level of acculturation, and the amount of sleep. Previous studies argued that stress could be seen as a process that is affected by demographic variables such as age and gender. Aging is related to the stress response, especially during disasters. Older people are more vulnerable than youngsters. Functional measures of lymphocyte activity have been noted to be negatively affected by normal aging (Clot et al. 1972). Older adults who experienced stressful losses are significantly more likely to drink excessively than those who had not or those who experienced fewer such losses. However, excessive-drinking responses to life crisis were magnified when they grew older and lost more of their

family, friends, and peers (Jennison 1992). However, in this study age was not a significant covariable with the psychoneuroimmunological measurements. The discrepancy between previous studies and this study might be due to the narrow range of age distribution in this study subjects.

Studies relating stress to gender have demonstrated that men are more severely distressed than women. This difference is related to coping styles of men and women. Women maintain stronger emotional ties with others while men engage in solitary brooding or the use of alcohol, drugs or smoking. Differences between women of different marital statues showed that the never married women had a more frequent mention of stressful life-change events, a higher involvement in personal health problems, and a lower regard for their occupation than did the married women who were more family-centered (Verbrugge 1985). Hurh and Kim (1988, 1990c) also found that there are sex differences in the mental health correlates among Korean immigrants. For example, work-related variables, such as job satisfaction, occupation, and income, are strongly correlated with the male respondents' positive mental health. On the other hand, female respondents' positive mental health is more related to family life satisfaction, ethnic attachment variables (e.g., Korean church affiliation, kinship contact, reading of a Korean newspaper, etc.), and some Americanization variables (e.g., having a driver's license, being proficient in English, and having American friends). On the contrary, in this study there was a trend that the frequency of somatization was higher among women than men at 12 months after the riots, but it did not reach a significant difference. This

result, while suggestive, may reflect a constitutional tendency to respond to stress and challenge in a male-like fashion that had influenced the vocational choice of the female victims as home-shop owners (bread winners), in addition to the in traditional gender role of home makers, and to the extent to which they had acquired a masculine way of responding as a result of exposure to the same challenges as their male victims. This interpretation corresponds to the findings of Hurh and Kim (1988), who argued that high individual earnings are negatively related to the mental well-being of the employed females. A better understanding of sex-role identity as a determinant of stress and coping responses should be investigated in this population.

In this study there was no psychological difference between employers and employees. Some studies have shown that members of lower social classes experience more stress, not because of more stressful life events, but because of fewer resources for coping or social buffering (Kessler et al. 1986; Dressler 1993). Kessler et al (1985) state that one of the oldest and most firmly established associations in psychiatric epidemiology is the one between social class and mental illness. People in socially disadvantaged positions have been shown to have higher rates of psychiatric disorder than their more advantaged counterparts. Research showed that this class difference was not caused by the fact that lower-class people were exposed to more stressful life experiences. Rather, it appeared that these experiences have a greater capacity to provoke mental health problems in the lower class than in the middle class. In other words, their coping efforts are assumed to be less adequate.

Moreover, not only are mental health problems more prevalent in the lower socio-economic classes, but so are infections and parasitic diseases, infant mortality rates, and actually nearly all causes of death. Kessler et al. (1986) summarize evidence suggesting that lower-class people are disadvantaged in their access to supportive social relationships. In addition, these authors point to evidence that personality factors associated with vulnerability of stress -- such as low self-esteem, fatalism, and intellectual inflexibility -- are more common among lower-class people. Attitudes towards eating, smoking and actively participating in sports or drug abuse are affected by the general value system of the direct social environment. The discrepancy between previous studies and this study might be due to the study subject bias in this study. Over 90% of respondents were self-employers.

This study did not find a significant difference in psychological profiles among married, divorce and single groups. As I presented in chapter two, it has been firmly established that marital disruptions are associated with elevation of morbidity. Although a number of alternative hypotheses may be put forth (e.g. marital partners often share a number of behaviors, live in the same housing conditions, health variables may play a role in the choice of partners, etc.), there is a host of evidence that the loss of a beloved person can negatively influence one's health status. Bereaved people have been studied many times and by investigators of different disciplines. The picture that emerges seems rather consistent. It has been found that bereaved people have an elevated risk of death from several causes in the first period after the loss. In addition, it

has been shown that the activity of the adrenal cortex is influenced, and that the immunological functioning is affected. This study result might be also due to the study subject bias (over 90% of the victims were married, while divorce or separation were negligible).

This study also failed to find a difference between the level of acculturation and psychoneuroimmunological variables as measured by the length of residence in the U.S. naturalization and Anglicization of the first name. It is commonplace in the literature on migration, mental health, and mental disorder to observe that long-distance journeys entail a set of engulfing life events (losses, changes, conflicts, and demands) that, although varying widely in kind and degree, severely tests the immigrant's emotional resilience. Immigration is a long radical life-changing process of uprooting, moving to another place, and rerooting in a new place. It can be conceptualized as being born again in terms of sociocultural readjustment in new context. Migration and especially refugee status, can produce profound psychological distress, even among the best prepared and most motivated and even under the most receptive of circumstances. The immigrants lived in crisis because they were uprooted. In transplantation, while the old roots were sundered, before the new were established, the immigrants existed in an extreme situation; the shock, and the effects of the shock, persisted for many years.

Scholars also argue that there are considerable psychological, behavioral, and physical health problems related to acculturation to mainstream society -- so-called acculturative stress. Studies of acculturation and stress have argued that higher levels of

acculturation create more rather than less stress on immigrants in a culturally plural society such as the U.S. (Dressler 1982, 1987, 1992; Berry and Kim 1988; Portes and Rumbaut 1990). This may be either because acculturation itself is a stressful process or because the immigrants are acculturated into a more stressful society. Most scholars support the latter view.

In 1930, the suicide rate among the foreign born in Chicago was 38.8 per 100,000, compared to less than one-third that figure (12.4) for the native born, and the suicide rate for each immigrant group in the United States was found to be two to three times higher than for the same nationality in Europe (Portes and Rumbaut 1990). According to Dr. Cho, a psychiatrist in Los Angeles, the suicide rate for Korean-Americans has rapidly increased enough to kill at least seven people during last two months due to the lack of emotional strength to cope with acculturation to an American way of life such as individualism and isolation (The Los Angeles Korea Times Jan. 7, A3, 1994). Another very impressive finding by Marmot et al (1976) showed that the differences in cardiovascular mortality rates between Japanese immigrants in different parts of the United states could not be accounted for by nutritional factors or other biomedical risk factors. Rather, it appeared that Japanese culture provided them a very efficient protection against myocardial infarction. Studies with Japanese immigrants in the United States further showed that when those people assumed the American way of life, their morbidity and mortality rates for cardiovascular disease more and more resembled those of the Americans. A corresponding finding was reported by Wolf and coworkers (1987) who studied the

population of Roseto, a traditional Italian-American village in eastern Pennsylvania. Their results suggested that the unusually low incidence of death from myocardial infarction in this village could be attributed to social factors, rather than to dietary habits or cholesterol levels. Henry and Cassel (1988) reviewed the evidence that there are cultural groups all over the world whose blood pressures are low and do not change with age; moreover, coronary and hypertensive heart diseases and strokes are rare in such cultures. Based on such findings it was concluded that people living in a stable society and who are well-equipped by their cultural background to cope with the demands of their immediate environment will not show a rise in blood pressure with age. Although it is realized that dietary factors such as the daily intake of salt must be taken into account, the data nevertheless suggest that high blood pressure can develop in the presence of a life-time low intake of salt and, vice versa, that a high salt diet is not incompatible with persistent low blood pressure. In short, there is a host of evidence suggesting that the culture in which people live not only influences their beliefs, attitudes and (social) behavior, but, in consequence, also their disease patterns.

For Korean immigrants in the Chicago area, as I presented in the earlier chapter, the exigency stage the stagnation stage appear to be those that carry the greatest risk for mental and emotional problems. The first one to two years of resettling and were the most stressful, and the immigrants were most vulnerable during this period. The factors that contributed most to their difficulties were economic hardship, culture shock, language problems, lack of

social support, and family conflict. Korean immigrants' mental health and life-satisfaction improved the longer they stayed in the United States and the more confidence and mastery they gained in their new environment until the stagnation stage arrived. Racial identity problem created mental health problems during the stagnation stage (Hurh and Kim 1988).

However, in this study, acculturative differences in stress responses were not observed, possibly due to severe physical stress caused by the need to rebuild businesses and psychological distress associated with the riots.

Psychoneuroimmunological Changes and Stress

This study found that there was a chronically significant psychoneuroimmunological impact of life change stress due to the riots among property-damaged victims. According to the classic theory of social disturbances, riots could have salutary and cathartic effects on psychological status through strengthening the integration of society and increasing group cohesion (Fogelson 1970; Coser 1956), which means the release of symptom-producing tensions and frustrations through scapegoating powerless groups. However, the pure victims of the riots among direct Korean-Americans sustained considerable psychoneuroimmunological changes including hormonal and immunological components. One possible reason for the discrepancies between previous studies and this study might be a lack of distinction in previous studies between

the innocent property-damaged victims of the riots and rioters who may experience an elated cathartic effect and/or group cohesion. Most studies of urban riots have not clearly examined this point. A second reason for the discrepancy is that some studies focus on dominant phenomenon of a population's behavior while this study focused on the underlying facts of individual psychoneuroimmunology. Another factor contributing to different findings is the time at which the research is conducted. Many studies have been carried on long after the disaster when the expression of psychological states has been transformed into cultural norms and values. Also, most of studies are cross-sectional rather than longitudinal and lacking a control group. Furthermore, studies from the 1960's and 1970's failed to recognize the signs and symptoms of post-traumatic stress disorder now widely recognized to occur under a variety of circumstances (Davidson and Baum 1986; Solomon and Flum 1988; American Psychiatric Association: DSM-III-R 1987). However the results of this study are correspondent to the claim that psychological impact was considerable among those who suffered from personal and property damages in recent natural disaster studies (Young 1989; Shore et al. 1986).

Surprisingly this study also found that the psychoneuroimmunological impact related to life change stress peaked at six months and decreased at 12 months after the riots which sustained still higher than those of six week profiles. This result can be explained by the mechanism of chronic stress response. The process that control the blend and amount of neural hormone release (Corticotropin-releasing factor, CRF) depend on both the

current physiological state of the organism and its prior exposure (Silverman et al. 1989). Silverman et al. (1989) found that exposure of rats to complex, chronic stressors leads to physiological modifications of Corticotroin-releasing factor (CRF) cells in the paraventricular nucleus (the section of the hypothalamus containing the most numerous population of CRF-producing cells). The stress of prolonged immobilization leads to a reduction of the CRF receptor number in the pituitary (Hauger et al. 1989). While cortisol secretion is frequently elevated in response to a variety of stressors, it is the initial response that is most vigorous, with prolonged exposure leading to adaptation (Ursin et al. 1978). However, even in cortisol adapted animals that are chronically stressed, exposure to novel stimuli results in an even more rapid endocrine response (Sakellans and Vernikos-Danellis 1975).

The Korean-American victims were continuously threatened by unavoidable and unpredictable revictimization by hate crimes and suffered from the uncertainty about the results of Rodney King's second verdict until April 17th, 1993 (refer to the Los Angeles Korea Times from April 29, 1992 to December 17th, 1993). The uncertainty and revictimization created a novel stimulus effect, which resulted in an even higher cortisol secretion at the six-month profile compared to the six-week profile. The 12-month survey was conducted just two weeks after the second acquittal in the Rodney King's case. Certainly, the result of the second verdict reflected on the 12-month profiles which was lower than those of six-month profiles.

There is general agreement among researchers that physical illness onset is likely to occur within, at most, a period of two years following a cluster of life events. Consequently, studies where reports of life events are obtained from subjects who are then followed up with regard to illness onset, a period of usually one year but up to two years following the life events is required. One possible reason for the time discrepancies between previous studies and this study might be neuroimmunological changes begin earlier than illness manifestation. Life-change stress mediated by psychoneuroimmunological variables is followed by a complex adaptation process involving the appraisal of threat and the selection, implementation, modification and evaluation of coping strategies. Lastly, failure of such psychoneuroimmunological coping mechanisms including adaptive reorganization turns to maladaptive outcomes, such as physical illness.

However, there was a study subject problem to interpret in this study from this perspective. The subject numbers were considerably reduced during the second survey. Only 30% of the first survey subjects participated in the second survey due to change in their residence. However, most researchers would agree that life events depends on how these events are perceived by the individual (Dohrenwend and Dohrenwend 1974) and the individual stress perception may be the same within culturally or otherwise homogeneous groups (Rahe et al 1971; Holmes and Masuda 1974; Miller et al 1974). This argument can be supported by a finding of this study that the psychoneuroimmunological profiles of non-property-damaged victims showed the same trend as those of

victims through phases even though it was at a lower intensity than those property-damaged victims.

This study also found a significant linear correlation between cortisol levels, somatization, and life-change events. Property-damaged victims experienced higher life-change events, had higher cortisol levels, and perceived the riots as being more stressful than non-property-damaged victims. Further, property-damaged victims had lower s-IgA levels than non-property-damaged victims. This finding is consistent with the view that cortisol may suppress immunity as I presented in chapter 3.

Early research into the relationship of stress to physiological emotional arousal was stimulated by Cannon's (1929) observations showing that emotionally arousing stimuli may cause harmful changes in basic physiological processes. Cannon (1929) suggested that even the most normal and necessary life events are potential contributors to the development of pathological conditions. Selye (1956) originally argued for a generalist position in that he claimed that any noxious agent could mobilize the General Adaptation Syndrome (GAS), even psychological demands or threats. Levi's (1965) research on increased catecholamine excretions following stress suggests much the same thing. In addition, the work of Holmes and Rahe (1967), Dohrenwend (1973) and Levi (1974), as well as studies growing out of this research, also tends to adopt a position of specificity with regard to stress and reactivity (Mason 1971; Lazarus 1977).

Recent studies on the relationship between psychological distress and illness have been developed as a field of

psychoneuroimmunology. This line of studies provides sound evidence for stress as a maladaptive process which is quite different from the classic theory of GAS. When a person perceives stress, the hypothalamus (HT) in the brain appears to play a central role in coordinating the endocrine, autonomic, and behavioral responses to stress. Select cell populations within the HT exert neural control over the two main axes (pituitary-adrenocortical and sympathetic-adrenomedullary). These axes are responsible for the glucocorticoid-and proopiomelanocortin (POMC)-derived peptides and the release of epinephrine and norepinephrine into circulation.

The HT neural regulation of these systems involves several neuropeptides, including corticotropin-releasing factor (CRF), vasopressin (VP), and oxytocin (OT) (Silverman et al., 1989). Specifically, CRF stimulation leads to co-secretion of ACTH and POMC-derived peptides (in particular-endorphin) from the pituitary. The release of catecholamines (norepinephrine and epinephrine) constitutes an initial response to stressors, and is controlled via regional activation of sympathetic neurons and discharged from the adrenal medulla (Kopin et al. 1988). It appears that POMC-derived peptides act as a brake on the sympathetic and adrenomedullary systems whenever they are activated (Grossman 1989). In this way, they probably serve to counterbalance stress-hormone release, possibly diminishing harmful consequences of frequent over stimulation by chronic stress. In another word, when person perceives stress corticotropin-releasing factor in the hypothalamus is activated and stimulates secretion of corticosteroids (cortisol)

from the adrenal glands into the blood stream. Thus, cortisol levels are high in stressful situations.

As presented in chapter 3, stress appears to down-regulate the immune response in humans. Cortisol has been shown to inhibit serum immunoglobulin production. High cortisol levels suppressed immunity (antibodies) as indicated by s-IgA in this study. Cortisol and s-IgA levels in saliva parallel those in blood (Aakal-Ansari et al. 1982). Therefore, cortisol and s-IgA in saliva were used in this study to indicate the stress level at the sub-individual level.

One possible explanation for the change in the immune response seen in bereaved subjects involves the mediating role of psychiatric symptoms such as anxiety and depression. The Linn et al. (1984) study provides some support for this hypothesis since bereavement in the absence of moderate to severe depression was not sufficient to bring about immune change. Linn et al. showed that depression had a greater effect on the immune response than recent death or illness of a family member. Thus, how one reacts to stress (coping) was thought to have more immunologic relevance than how much objective stress was experienced. As stressful life events as well as symptom distress may have implications for immunity, measures of both of these concepts were important. Further evidence was provided by Lock et al (1984) who tested whether the magnitude and density of life-change stress and/or the intensity of psychiatric symptom distress were related to Natural Killer Cell Activity (NKCA). Results showed that individuals, however, with less capacity to adapt to life change, as indicated by self-reports of excessive psychiatric symptoms, were expected to evidence

impairments in cellular immune function, which indicated that some interaction between stress and psychiatric symptoms might explain variations in NKCA. A number of studies have further examined the relationship between depression and immune function. Schleifer et al. (1983, 1985, 1989) have performed a series of studies looking at the depression-immune function relationship. In their initial study, they found that depressed subjects had lower total T- and B-lymphocyte numbers, as well as lower mitogen-induced lymphocyte stimulation. Furthermore, self-reported psychiatric symptoms were found to correlate inversely with NKCA, suggesting that symptoms such as anxiety and depression may negatively affect immunity (Pardine and Napoli 1983; Schleifer et al. 1989).

Considering specific mechanisms, some researchers have conjectured that depression and immune function are linked through cortisol secretion. Several studies have found both suppressed immune function and increased cortisol secretion in depressed subjects (Schleifer et al 1985, 1989; Denney et al. 1988).

In order to determine whether depression is a mechanism to suppress immune system, I employed the UCLA Loneliness scale during the first survey, which was highly correlated to anxiety or depression scores. However, in this study there was no group difference in loneliness scores. This result might depend on two reasons: 1) the scale used to assess loneliness (the UCLA Loneliness Scale; Russell et al. 1980) was developed for loneliness caused not by social conflict such as riots but by personal isolation, which means the scale was not developed for Asians who generally have strong family relations; 2) the multiple correlation between the

scale and psychological states such as anxiety, depression, and isolation did not reflect specific psychological states of depression. In order to answer these questions, a standardized depression scale (CES-D) previously tested for Korean-Americans in Chicago area was employed during the second survey. The result showed that there was a significant group difference in the depression scores. The depression scores of Property-damaged victims were about two times higher than non-property-damaged victims and about 4.5 times higher than those of Korean-Americans in Chicago. The depression scores were about two times higher even in non-property-damaged victims than those of Korean-Americans in Chicago. This result may indicate that riot distress affected not only the individual but also the community. This indication can also provide a reason why psychoneuroimmunological profiles of non-property-damaged victims followed the same trend as those of victims even though it was of a lower intensity than those of victims.

In this study, there exists a significant inverse relationship between cortisol level and s-IgA and a positive relation between cortisol and depression scales. This finding can explain why there was a significant phase difference in neuroimmunological variables in spite of the lack of a significant phase difference in life-change events, which means the mechanism of immune suppression may be via emotional disorder such as depression resulted from stressful life-change events but not directly related to the events themselves.

This result was supported by a report by Dr. M. M. Cho, a psychiatrist who counseled Korean-American victims at the Asian

Pacific Counseling Center in Los Angeles where approximately 700 victims consulted psychotherapists during the first year after the riots. Among them, 600 victims took medication for clinically diagnosed depression. Several were admitted for pathological mental states, and 10-15 are still undergoing psychotherapy. Most victims had psychosomatization symptoms (The Los Angeles Korea Times July 14, B, 1993). This result was also supported by Dr.Yoon, who found that more than 800 Korean-Americans in Koreatown in Los Angeles were suffering from severe depression from April 1992 to December 1993 due to unemployment from the rioting. This number increased about 40% of those of 1991 (The Los Angeles Korea Times Dec., A2, 1993).

Culture-Bounded Stress Syndrome.
Hwa-byung (G] QUə)

"Hahn (GKB) is something accumulated, precipitated and formed
in mass in the depth of mind in Korean people"
(Prince 1989:144).

In this section I would like to discuss the ethnopsychiatric findings of an anger-related stress syndrome, hwa-byung (G] QUə) among property-damaged victims.

This study found that there was a highly vocalized psychosomatization syndrome, hwa-byung (G] QUə) in Korean-American victims. The suppression of anger, shame, hopelessness, and helplessness among Korean-American victims of the riots is

transformed into physical illnesses called hwa-byung (GJ QUā). Hwa-byung (GJ QUā) was related to hahn (GKB), an ethos of victimized-anger syndrome.

Korean-American riot victims view mental illness as a stigmatizing and threatening experience for themselves and their families. Thus, victims tend to express more bodily complaints than psychological complaints such as emotional distress, anxiety, and depression. In Korean-American families, physical complaints are readily accepted. However, psychological or mental complaints tend to be either ignored or taken as a luxurious complaint.

Hwa-byung (GJ QUā) is a disorder distinctively conceptualized and labeled in traditional Korean culture and common in Koreans (Pang 1991). Because Koreans do not express emotion openly, when it goes beyond a certain threshold level it is manifested physically as a form of illness called hwa-byung (GJ QUā, anger illness). Hwa-byung (GJ QUā) has been known for many years in Korea as a somatization disorder that is predominant among married women who are beyond middle age and of low social standing. Lin (1983) of the University of California at Los Angeles gave the first report in English of clinical cases of hwa-byung (GJ QUā) in the United States. Hwa-byung (GJ QUā) is a uniquely Korean mixed neurotic state with characteristic symptoms that are culture-related. The term literally means anger disease. Within the framework of classical Chinese medicine, an excess of the fire element manifests itself behaviorally in an expression of anger. Hwa-byung (GJ QUā) is psychodynamically related to the feelings of hahn (GKB), an individual and collective emotional state of Koreans. The state is

related to their cultural and historical experience of despair and anger associated with repeated military invasions, political and social suppression, and personal loss. Historically, Korea has been victimized by neighboring countries for many centuries. Politically and domestically Korea has been a class-conscious society (the ruling class and commoners) where the underclass, especially women, have endured much difficulty and hardship. Women have suffered from oppression by husbands, in-laws, and by society in general. These powerless people have had to suppress their feelings of anger and resentment and accept pervasive frustration for a long time. The shaman healing ceremony appears to help patients release their hahn (GKB). It is essentially a victimization complex. The syndrome of hwa-byung (GJ QUð) and the concept of hahn (GKB) appear to be uniquely Korean (Prince 1989).

Lin (1983) has discussed the typical configuration of symptoms presented by patients with this syndrome, which centers most prominently on, but is not limited to, epigastric pain. The pain is attributed to a mass in the upper abdomen that the patient fears will lead to death. Other common symptoms include excessive tiredness and insomnia, acute panic, fear of impending death, loss of appetite, digestive disorders, dyspnea, palpitation, and muscle aches and pains. The most frequent symptoms found in the hwa-byung patients were an oppressive and heavy feeling in the chest, a feeling of a mass in the epigastrium or abdomen, a feeling of something hot pushing up in the chest, a sensation of heat or hotness in the body (described as feeling like boiling, burning, or fire), sighing, headache, aches in the body; dry mouth, insomnia, palpitation, and

indigestion. The symptoms of hwa-byung (GJ QUə) in this study corresponds to those of the previous study. Interestingly, most of the victims expressed a view that hwa-byung (GJ QUə) has psychological causes of extreme anger at the mainstream society. This means that Korean-American lay people have a concept of the psychogenic nature of their physical symptoms, which is still controversial in Western Academia.

One of the stress systems which can explain frequent upper respiratory infections and gasum-ari (rk TMă dk fl) is SAM system which I presented in previous chapter. Highly stressful moments greatly activate the sympathetic nervous systems, which decreases digestive activity; during the period of rest the parasympathetic system rebounds, releasing an excess of digestive juices that damage the inside of the stomach and cause ulcers. In addition, intense contractions, especially two hours after a period of stress, tend to break up the protective mucus lining of the stomach and expose it to strong gastric acids. SAM activation is accompanied by the release of epinephrine, norepinephrine, and other catecholamines into the bloodstream. The sympathetic influences on immune function have also been elucidated. One is the release of catecholamines, which when simulated with injections of epinephrine, results in the redistribution of lymphocytes out of areas of storage and into circulation, while reducing the functional efficacy of lymphocytes.

To summarize, culturally influenced somatization is an important concept in understanding Korean-American riot victims because it allows us to deal with the underlying problems that link

together emotional and bodily distresses. Among property-damaged victims hwa-byung (GJ QUə) related to their hahn (GKB) is a cultural expression of stress syndrome. A more clinical interpretation of the psychological meaning of their somatic complaints would not make much sense to most Korean-Americans.

CHAPTER 9

CONCLUSION

This study provides evidence of the negative psychoneuroimmunological effects of life change stress related to property damage on Korean-American victims as compared with a control group based on self-rated psychometrics and chemical profiles, and cultural analysis in the manner of longitudinal research design. This is also the first empirical study that provides psychoneuroimmunological evidence for adverse effects of stressful life change associated with the riot violence. This study indicates that the riots had not only a psychological impact but also a physical impact which was chronically sustained up to 12 months after the riots.

Cultural findings of hwa-byung (GJ QUā) was introduced to support the results of riot distress. Questions remain concerning the persistence of deleterious psychoneuroimmunological changes and their consequence for health and well being beyond the 12 months after the riots. A follow-up investigation of at least two years is recommended to answer those questions. The symptoms of reproductive impairment resulted from riot distress should carefully be investigated in a future.

I would like to suggest that future disaster studies should consider using random samples rather than clinical cases, comparisons of the control groups, direct property-damaged victims of riots and other victims. Cross-sectional as well as longitudinal laboratory and field studies are recommended. Cultural information is needed to investigate underlying factors of psychological effects of disaster in multicultural societies.

In addition, the cultural component of psychological illness and healing must be reflected in the disaster intervention at individual and community levels. The utilization of an alternative medical system (ethnomedicine), such as a Korean-traditional medical system, which mainly treats psychological illness as a physical disorder, should be used along with Western psychotherapy.

LIST OF REFERENCES

- Aakal-Ansari, A. A. K., Perry, L. A., Smith, D. S., and Landon, J.
1982 Salivary Cortisol Determination: Adaptation of a Commercial Serum Cortisol Kit. *Annual Clinical Biochemistry* 19:163-166.
- Ader, R. and Cohen, N.
1975 Behaviorally Conditioned Immunosuppression. *Psychosomatic Medicine* 37:333-354
- American Psychiatric Association
1987 Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition, Revised. Washington DC: American Psychiatric Association.
- Antonovsky, A.
1974 Conceptual and Methodological Problems in the Study of Resistance Resources and Stressful Life Events: *In* Stressful Life Events: Their Nature and Effects. Dohrenwend, B. S. and Dohrenwend, B. P. eds. Pp. 245-25. New York: Wiley.
- Askenasy, A. R., Dohrenwend, B. P. and Dohrenwend, B. S.
1977 Some Effects of Social Class and Ethnic Group Membership on Judgments of the Magnitude of Stressful Life Events: a Research Note. *Journal of Health and Social Behavior* 18:432-439.
- Association of Korean-American Victims of the L.A. Riots
1993 Korean-American Claim Statistics for a Suit against the Government. An unpublished report.
- Ballieux, R. E.
1991 Impact of Mental Stress on the Immune Response. *Clinical Periodicals* 18:427-430.

- Bartrop, R. W., Luckhurst, E., Lazarus, L., Kiloh, L. G., and Penney, R.
1977 Depressed Lymphocyte Function after Bereavement. *Lancet* 1:831-845.
- Baum, A., Gatchel, R., and Schaeffer, M. A.
1983 Emotional, Behavioral, and Physiological Effects of Chronic Stress at Three Mile Island. *Journal of Counseling and Clinical Psychology* 51(4):565-572.
- Baum, A., Schaeffer, M. A., Lake, C. R., Fleming, R., and Collins, D. L.
1985 Psychological and Endocrinological Correlates of Chronic Stress at Three Mile Island. *In Perspectives on Behavioral Medicine* Vol. 2, R. Williams, ed. Pp. 201-217. California: Academic Press.
- Bennet, G.
1968 Bristol Floods 1968: A Controlled Survey of Effect on Health of Local Community Disaster. *British Medical Journal* 3: 454-458.
- Berry, J. and Kim, U.
1988 Comparative Studies of Acculturative Stress. *International Migration Review* 21(3):491-509.
- Blake, R. L. Jr.
1991 Social Stressors, Social Supports and Self-Esteem as Predictors of Morbidity in Adults with Chronic Lung Disease. *Journal of Family Practice Research* 11(1):65-74.
- Blalock, J. E.
1989 A Molecular Basis for Bidirectional Communication between the Immune and Neuroendocrine Systems. *Journal of American Physiological Society* 69(1):1-32.
- Bloom, A., Asher, S., and White, S.
1978 Marital Disruption as a Stressor: A Review and Analysis. *Psychological Bulletin* 85:867-879.

- Brandtzaeg, P.
1989 Salivary Immunoglobulins. *In* Human Saliva: Clinical Chemistry and Microbiology Vol. II. Tenovuo, J. O., ed. Pp. 1-54. Boca Raton, Florida: CRC.
- Broadbent, D. E., Broadbent, M. H. P., Phillpotts, R. J., and Wallace, J.
1984 Some Further Studies on the Production of Experimental Colds in Volunteers by Psychological Factors. *Journal of Psychosomatic Research* 28:511-521.
- Brown, G. W. and Harris, T.
1978 *The Social Origins of Depression*. London: Tavistock.
- Brown, G. W.
1974 Meaning, Measurement and Stress of Life Events. *In* Stressful Life Events: Their Nature and Effects. Dohrenwend, B. S. and Dohrenwend, B.P., eds. Pp.245-258. New York: Wiley.
- Bursik, K.
1991 Adapation to Divorce and Ego Development in Adult Women. *Journal of Personality and Social Psychology* 60(2):300-306.
- Byun, J. and Lieberman, S. L.
1992 A Cross-Cultural Study on Loneliness and Immune Supression among Asian and Anglo-American Graduate Students. Unpublished manuscript.
- Cannily, J.
1975 Circumstances, Events and Illness. *Medicine* 10:454-458.

1976 Life Events Before Myocardial Infarction. *Journal of Human Stress* 2:3-17.
- Cannon, W. B.
1929 Bodily Changes in Pain, Hunger, Fear, and Rage. 2nd Edition. New York: D. Appleton.

1942 "Voodoo" Death. *American Anthropologist* 44:182-189.
- Cannon, W. B. and De La Paz, D.
1911 Emotional Stimulation of Adrenal Secretion. *American Journal of Physiology* 29:64-70.

Caplan, R. D.

- 1975 A Less Heretical View of Life Change and Hospitalization. *Journal of Psychosomatic Research* 19:247-250.

Choy, B. Y.

- 1979 *Koreans in America*. Chicago: Nelson-Hall Publications.

Church, J. S.

- 1974 The Buffalo Creek Disaster: Extent and Range of Emotional and/or Behavioral Problems. *Omega* 5(1):61-63.

Clayer, J. R., Bookless-Pratz, C. and Harris, R. L.

- 1985 Some Health Consequences of Natural Disaster. *Medical Journal of Australia* 143:182-184.

Clot, J., Charmasson, E., and Brochier, J.

- 1972 Age-Dependent Changes of Human Blood Lymphocyte Subpopulations. *Clinical and Experimental Immunology* 32: 346-351.

Coser, L. A.

- 1956 *The Functions of Social Conflict*. Glencoe, Ill: The Free Press.

Cook, D. J. and Hole, D. J.

- 1982 The Etiologic Importance of Stressful Life Events. *British Journal of Psychiatry* 143: 397-400.

Craig, T. K. and Brown, G. W.

- 1984 Goal Frustrating Aspects of Life Event Stress in the Etiology of Gastrointestinal Disorders. *Journal of Psychosomatic Research* 28:411-421.

Creed, F. H.

- 1981 Life Events and Appendectomy. *Lancet* 1:1381-1385.

Cupps, T. R. and Fauci, A.

- 1982 Corticosteroid-Mediated Immunoregulation in Man. *Immunological Review* 65:133-155.

Davidson, L. M. and Baum, A.

- 1986 Chronic Stress and Post-traumatic Stress Disorders.
Journal of Consulting and Clinical Psychology 54(3):303-308.

De Denedittis, G. Lorenzetti, A. and Pieri, A.

- 1990 The Role of Stressful Life Events in the Onset of Chronic
Primary Headache. Pain 40(1):65-75.

Denney, D. R., Stephenson, L. A., Penick, E. G., and Weller,
R. A.

- 1988 Lymphocyte Subclasses and Depression. Journal of
Abnormal Psychology 97:499-519.

Derogatis, L. R.

- 1977 The SCL-90 Manual I: Scoring, Administration, and
Procedures for the SCL-90. Baltimore, MD: Johns Hopkins
University School of Medicine, Clinical Psychometrical Unit.

Devereux, G.

- 1956 Normal and Abnormal: The Key Problem of Psychiatric
Anthropology, *In* Some Uses of Anthropology: Theoretical and
Applied. Casagrande, J. B. and T. Gladwin, eds. Pp. 23-48.
Washington, DC: Anthropological Society of Washington.

Dohrenwend, B. P.

- 1974 Problems in Defining and Sampling the Relevant Population
of Stressful Life Events. *In* Stressful Life Events: Their Nature
and Effects. Dohrenwend, B. S and Dohrenwend, B. P., eds. Pp.
275-310. New York: Wiley.

Dohrenwend, B. S. and Dohrenwend, B. P.

- 1974 Stressful Life Events: Their Nature and Effects. New York:
Wiley.

- 1978 Some issues in research on Stressful Life Events. Journal
of Nervous and Mental Disease 166:7-15.

Dohrenwend, B. S.

- 1973 Life Events as Stressors: A Methodological Inquiry. Journal
of Health and Social Behavior 14:167-175.

- Dorian, B., Garfinkel, P., Brown, G., Shore, A., Gladman, D., and Keystone, E.
 1982 Aberration in Lymphocyte Subpopulations and Function During Psychological Stress. *Clinical and Experimental Immunology* 50:132-138.
- Dorian, B. J., Keystone, E., Garfinkel, P. E., and Brown, G. M.
 1981 Immune Mechanisms in Acute Psychological Stress. *Psychosomatic Medicine* 43:84-93.
- Dressler, W. W.
 1982 Hypertension and Cultural Change: Acculturation and Disease in the West Indies. New York: Redgrave Publishing Company.
 1987 Arterial Blood Pressure and Modernization in Brazil. *Pan American Health Organization* 89:398-408.
 1987 The Stress Process in a Southern Black Community: Implications for Prevention Research. *Human Organization* 46(3):211-220.
 1993 Health in the African-American Community: Accounting for Health Inequalities. *Medical Anthropology Quarterly* 7(4):325-435.
- Dressler, W. W. and Bernal, H.
 1982 Acculturation and Stress in a Low-Income Puerto Rican Community. *Journal of Human Stress* 9:32-38.
- Edward Lee Memorial Scholarship Foundation
 1993 Koreatown Before and After the Riot.
- Erickson, K. T.
 1976 Loss of Community at Buffalo Creek. *American Journal of Psychiatry* 133(3):302-305.
- Faris, R. E. L. and Dunham, H. W.
 1930 Mental Disorders in Urban Areas. Chicago: University of Chicago Press.
- Fishbain, D. A.
 1991 Impact of a Human-Made Disaster on the Utilization Pattern

of a Psychiatric Emergency Service. *Journal of Nervous and Mental Disease* 179(3):162-166.

Fogelson, R. M.

1970 Violence and Grievances: Reflections on the 1960's Riots. *Journal of Social Issues* 26:141-163.

Foster, G. M.

1974 Medical Anthropology: Some Contrasts with Medical Sociology. *Medical Anthropology Newsletter* 6(1):21-26.

Fraser, R. M.

1971 The Cost of Commotion: An Analysis of the Psychiatric Sequel of the 1969 Belfast Riots. *British Journal of Psychiatry* 118:257-264.

Friedmann, E., Katcher, A. H., and Brightman, V. J.

1977 Incidence of Recurrent Herpes Labialis and Upper Respiratory Infection: A Prospective Study of the Influence of Biologic, Social, and Psychological Predictors. *Oral Surgery* 43:873-880.

Froberg, D., Gjerdingen, D., and Preston, E.

1986 Multiple Roles and Women's Mental and Physical Health: What Have We Learned? *Women and Health* 11:79-96.

Fukudo, S., Suzuki, J. Tanaka, Y., Iwahashi, S. and Nomura, T.

1989 Impact of Stress on Alcoholic Liver Injury; a Historical Study. *Journal of Psychological Research* 33(4):515-521.

Garg, R.

1992 Academic and Nonacademic Self-Concepts: Influence of Recent Life Change Experiences and Demographic, Social, and Health Variables. *Psychological Reports* 70(3):871-782.

Gatti, G., Cavallo, R., Sartori, M. L., Ponte, D. D., Masera, R., Salvadori, R. C., and Angeli, A.

1987 Inhibition by Cortisol of Human Natural Killer (NK) Cell Activity. *Journal of Steroid Biochemistry* 26(1):49-58.

- Giblin, P., Ager, J. W., Poland, M. L., Olson, J. M., And Kamren, S. M.
1988 Effects of Stress and Characteristic Adaptability on Semen Quality in Healthy Men. *Fertility and Sterility* 49(1):127-132.
- Glaser, R., Pearson, G. R., Jones, J. F., Hillhouse, J., Kennedy, S., Mao, H., and Kiecolt-Glaser, J. K.
1991 Stress-Related Activation of Epstein-Barr Virus, Brain, Behavior, and Immunity 5:219-232.
- Glaser, R., Rice, J., Speicher, C. E., Stout, J. C., and Kiecolt-Glaser, J. K.
1986 Stress Depresses Interferon Production by Leukocytes Concomitant with a Decrease in NK Cell Activity. *Behavioral Neuroscience* 100: 675-684.
- Glaser, R., Rice, J., and Sheridan, J.
1987 Stress-Related Immune Suppression: Health Implications. *Brain, Behavior, and Immunity* 1:7-18.
- Glaser, R., Rice, J., Sheridan, J., Fertel, R., Stout, J., Speicher, C., Pinsky, D., Kotur, M., Post, A., Beck, M., and Kiecolt-Glaser, J.
1987 Stress-Related Immune Suppression: Health Implications. *Brain, Behavior, and Immunity* 1:7-20.
- Goldstein, S and Halbreith, V.
1987 Hormones and Stress. *In Handbook of Clinical Psychoneuroendocrinology*. Nemeroff, C. B. and Loosen, P. T., eds. Pp. 460-469. New York: Guilford Press.
- Grant, B. K.
1979 A Guide to Korean Characters. New Jersey; Hollyn International Corp.
- Greenley, J. R., Gillespie, D. P., and Linfenthal, J. J.
1975 A Race Riot's Effect on Psychological Symptoms. *Archives of General Psychiatry* 32:1189-1195.
- Groer, M. W., Thomas, S. P., and Shoffner, D.
1992 Adolescent Stress and Coping: A Longitudinal Study. *Research in Nursing and Health* 15(3):209-217.

Grossman, A.

- 1989 Opioids and Stress: The Role of ACTH and Epinephrine. *In* Neuropeptides and Stress Tache, Y., Morley, J. E., and Brown, M. R., eds. Pp. 313-324. New York: Springer-Verlag.

Halvorsen, R. and Vassend, O.

- 1987 Effect of Examination Stress on Some Cellular Immunity Functions. *Journal of Psychosomatic Research* 31:693-715.

Handlin, O.

- 1941 *Boston's Immigrants: A Study of Acculturation*. Cambridge, MA: Harvard University Press.

- 1973 *The Uprooted: The Epic Story of the Great Migrations that Made the American People*. Boston: Little, Brown.

Harris, T.

- 1984 *The Social and Psychological Background to Menstrual Disorders: Preliminary Report on a Study of Gynaecological Patients with Secondary Amenorrhoea and Abnormal Uterine, Bleeding*. Report to Mental Foundation.

Harrison, R. F., O'moore, R. R., and O'moore, A. M.

- 1986 Stress and Fertility: Some Modalities of Investigation and Treatment in Couples With Unexplained Infertility in Dublin. *International Journal of Fertility* 31(2):153-159.

Hauger, R. L., Millan, M., Harwood, J. P., Lorang, M., Catt, K. J., and Aguilera, G.

- 1989 Receptors for Corticotropin Releasing Factor in the Pituitary and Brain: Regulatory Effects of Glucocorticoids, CRF, and Stress. *In* *Molecular Biology of Stress*. Breznitz, S. and Zinder, O., eds. Pp. 3-17. New York: Alan R. Liss.

Heisel, S. J.

- 1972 Life Changes as Etiologic Factors in Juvenile Rheumatoid Arthritis. *Journal of Psychosomatic Research* 16: 411-420.

Hellhammer, D. H., Heib, C., Hubert, W., and Rolf, L.

- 1985 Relationship between Salivary Cortisol Release and Behavioral Coping under Examination Stress. *Medical Science* 13(1): 179-186.

Helman, C. G.

- 1987 Heart Disease and the Cultural Construction of Time: the Type A Behavior Pattern as a Western Culture-Bound Syndrome. *Social Science and Medicine* 25:969-979.

Henle, W. and Henle, G.

- 1982 Epstein-Barr Virus and Infectious Mononucleosis. *In Human Herpes Virus Infectious: Clinical Aspects*. Glaser, R. and T. Gotlieb-Stematsky, eds. Pp. 151-162. New York: Dekker.

Henry, J.P. and Gassel, J.C.

- 1969 Psychological Factors in Essential Hypertension. *American Journal of Epidemiology* 90:171-200.

Holmes, T. H. and Masuda, M.

- 1974 Life Change and Illness Susceptibility. *In Stressful Life Events: Their Nature and Effects*. Dohrenwend, B. S. and Dohrenwend, B. P., eds. Pp. 45-72. New York: Wiley.

Holmes, T. H. and Rahe, R. H.

- 1967 The social Readjustment Rating Scale. *Journal of Psychosomatic Research* 11:213-218.

Holmes, T. S. and Holmes, T. H.

- 1970 Short-Term Intrusions into the Life Style Routine. *Journal of Psychosomatic Research* 14:121-132.

House, J. S., Landis, K. R., and Umberson, D.

- 1989 Social Relationships and Health. *Science* 241:540-545.

Hudgens, G. A, Chatterton, R. I., and Torre, J.

- 1989 Hormonal and Psychological Profiles in Response to a Written Examination. *In Molecular Biology of Stress*. Breznitz S and Zinder O, eds. Pp. 265-275. New York: Alan R. Liss.

Hudgens, R. W.

- 1974 Personal Catastrophe and Depression: a Consideration of the Subject with Respect to Medically Ill Adolescents, and a Requiem for Retrospective Life Event Studies. *In Stressful Life Events: Their Nature and Effects*. Dohrenwend, B. S. and Dohrenwend, B. P., eds. Pp. 119-134. New York: Wiley.

Hui, W. M. Shiu, L. P., Lok, A. S., and Lam, S. K.

1992 Life Events and Daily Stress in Duodenal Ulcer Disease: A Prospective Study of Patients with Active Disease and in Remission. *Digestion* 52(34):165-172.

Hurh, WM. and Kim, KC.

1984 Korean Immigrations in America. Cranbury, NJ: Fairleigh Dickonson University Press

1988 Uprooting and Adjustment: A Sociological Study of Korean Immigrants' Mental Health. Final Report Submitted to National Institute of Mental Health, U.S. Department of Health and Human Services, Washington, DC.

1990a Adaptation Stages and Mental Health of Korean Male Immigrants in the United States. *International Migration. Review* 24(3):456-479.

1990b Religious Participation of Korean Immigrants in the United States *Journal for the Scientific Study of Religion* 29(1):19-34.

1990c Correlates of Korean Immigrants' Mental Health. *Journal of Nervous and Mental Disease* 178(11):703-711.

Department of Health and Human Services

1992 International Classification of Diseases: 10th Revision Clinical Modification, Vol. 1. Washington, DC: Public Health Services, Health Care Financing Administration.

Irwin, M., Daniels, M., Smith, T. L., Bloom, E, and Weiner, H.

1989 Impaired Natural Killer Cell Activity during Bereavement. *Brain, Behavior, and Immunology* 1:98-112.

Jarvelin, M. R., Moilanen, I., Vikenainen-Tervonen, L., Huttunen, N., P.

1990 Life Changes and Protective Capacities in Enuretic and Nonenuretic Children. *Journal of Child Psychology, Psychiatry, and Allied Disciplines* 31(5):763-774.

Jemmott, J. B. and Locke, S. E.

1984 Psychosocial Factors, Immunological Mediation, and Human Susceptibility to Infectious Disease: How Much Do We Know ? *Psychological Bulletin* 95(1):78-108.

Jemmott, J. B. and Magloire, K.

- 1988 Academic Stress, Social Support, and Secretory Immunoglobulin A. *Journal of Personality and Social Psychology* 55(5):803-810.

Jemmott, J. B. and McClelland, D. C.

- 1989 Secretory IgA as a Measure of Resistance to Infectious Disease: Comments On Stone, Cox, Valdimarsdottir, and Neale (1987). *Behavioral Medicine* 15:63-70.

Jemmott, J. B., Borysenko, J. Z., Borysenko, M., McClelland, D. C., Chapman, R., and Meyer, D.

- 1983 Academic Stress, Power Motivation, and Decrease in Secretion Rate of Salivary Secretory Immunoglobulin A. *Lancet* June 25:1400-1402.

Jennison, K. M.

- 1992 The Impact of Stressful Life Events and Social Support on Drinking among Older Adults: A General Population Survey. *International Journal of Aging and Human Development* 35(2):99-123.

Jerne, N. K.

- 1974 Toward a Network Theory of the Immune System. *Annual Immunology* 125:373-380.

Johnson, J. H. and Sarason, I. G.

- 1978 Life Stress, Depression and Anxiety: Internal-External Control as a Moderator Variable. *Journal of Psychosomatic Research* 22:205-208.

Kasi, S. V., Evans, A. S., and Niederman, J. C.

- 1979 Psychosocial Risk Factors in the Development of Infectious Mononucleosis. *Psychosomatic Medicine* 41(6): 445-466.

Katcher, A. H., Brightman, V., Luborsky, L., and Ship, I.

- 1973 Prediction of Incidence of Recurrent Herpes Labialis and Systemic Illness from Psychological Measurements. *Journal of Dental Research* 52:49-58.

- Kessler, R. C., Price, R. H., and Wortman, C. B.
1986 Social Factors in Psychopathology. A. Review of Psychology 36:531-572.
- Kiecolt-Galser, J. K., Garner, W., Speicher, C., Holliday, P. H., and Galser, R.
1984 Psychosocial Modifiers of Immunocompetence in Medical Students. Psychosomatic Medicine 46(1):7-14.
- Kiecolt-Glaser, J. K., Glaser, R., Dyer, C., Shuttleworth, E., Ogrocki, P., and Speicher, C. E.
1987 Chronic Stress and Immunity in Family Caregivers of Alzheimer's Disease Victims. Psychosomatic Medicine 49:523-531.
- Kiecolt-Glaser, J. K., Glaser, R., Strain, E. C,
1986 Modulation of Cellular Immunity in Medical Students. Journal of Behavioral Medicine 9:5-14.
- Kiecolt-Glaser, J., K, Glaser, R, and Williger, D.
1985 Psychosocial Enhancement of Immunocompetence in a Genatric Population. Health Psychology 4:25-31.
- Kiecolt-Glaser, J. K., Kennedy, S., Malkoff, S., Fisher, L. Speicher, C. E., and Glaser, R.
1988 Marital Discord and Immunity in Males. Psychosomatic Medicine 50:213.
- Kim, B.
1978 The Asian Americans: Changing Patterns, Changing Needs. Montclair, NJ: Association for Korean Christian Scholars in North America.
- 1980 The Korean American Child at School and at Home. Washington, DC: U.S. Government Printing Office.
- 1981 Women in Shadows. La Jolla, CA: National Committee Concerned with Asian Wives of U.S. Servicemen.
- Kim, D.
1977 How They Fared in American Homes: A Follow-up Study of Adopted Korean Children. Children Today 6(31):2-6.

Kim, I.

- 1987 Korea and East Asia: Premigration Factors and the U.S. Immigration Policy. *in* Pacific Bridges. Fawcett, J T., Carino BV, eds. New York: Center for Migration Studies.

Kim, Y.

- 1993 A History of the Korean-American Community in Southern California, Paper Presented at the Conference on "New Direction for the Korean-American Community" after the Civil Unrest of April 1992 in Los Angeles at the University of Southern California.

Kinston, W. and Rosser, R.

- 1974 Disaster: Effects on Mental and Physical State. *Journal of Psychosomatic Research* 18:437-456.

Kitano, H. L., and Daniels, R.

- 1988 Asian Americans: Emerging Minorities. Englewood-Cliffs, New Jersey: Prentice-Hall.

Klee, G. D. and Gorwitz, K.

- 1970 Effects of the Baltimore Riots on Psychiatric Hospital Admissions. *Mental Hygiene* 54:447-449.

Koh, S. D., Sakauye, R., and Koh, T.

- 1986 Mental Health and Stresses in Asian-American Elderly. P/AAMHRC Research Report. Chicago: Pacific/Asian American Mental Health Research Center.

Kopin, I. J., Eisenhofer, G., and Goldstein, D.

- 1988 Sympathoadrenal Medullary System and Stress. *In* Mechanisms of Physical and Emotional Stress. Chrousos, G. P., Lonaux, D. L., and Gold, P. W., eds. Pp. 11-24. New York: Plenum Press.

Korean-American Inter-Agency Council

- 1992 Executive Summary Highlights: Needs Assessment Interim Report. Los Angeles, CA.

Kronfol, Z. and House, J. D

- 1984 Depression, Cortisol, and Immune Function. *Lancet* 1:1026-1034.

- Kronfol, Z., House, J. D., Silva, J. Jr., Greden, J., and Carrol, B. J.
1986 Depression, Urinary Free Cortisol Excretion and Lymphocyte Function. *Journal of Human Stress* 148:70-73.
- Krugen S.
1982 The Newly Licensed Hepatitis B Vaccine. *Journal of American Medical Association* 247:2012-2015.
- Kune S., Kune, G. A., Watson, L. F., and Rahe, R. H.
1991 Recent Life Change and Large Bowel Cancer. Data from the Melbourne Colorectal Cancer Study. *Journal of Clinical Epidemiology* 44(1)57-68.
- Kuo, W.
1984 Prevalence Of Depression Among Asian-Americans. *Journal of Nervous and Mental Disorders* 172:449-457.
- Landman, R. M. A., Muller, F. B., Perini, C. H., Wesp, M., Erne, P., and Buhler, F. R.
1984 Changes of Immunoregulatory Cells Induced by Psychological and Physical Stress: Relationship to Plasma Catecholamines. *Clinical and Experimental Immunology* 58:127-139
- Lazarus, R. S.
1977 Psychological Stress and Coping in Adaptation and Illness. *In Psychosomatic Medicine*. Z. J. Lipowski, D. R. Lipsett, and P. L. Whybrow, eds. Pp. 14-26. New York: Oxford University Press.
- Lazarus, R. S.
1981 Little Hassles can be Hazardous to Health. *Psychology Today* July: 58-62.
- Lazarus, R. S. and Folkman, S.
1984 *Stress, Appraisal and Coping*, NEW YORK: Springer-Verlag.
- Levi, L.
1965 The Urinary Output of Adrenalin and Noradrenalin during Pleasant and Unpleasant Emotional Stress. *Psychosomatic Medicine* 27:80-89.

Levi, L.

- 1974 Psychological Stress and Disease: A Conceptual Model.
In Life Stress and Illness. E. K. Gunderson and R. H.
 Rahe, eds. Pp. 8-23. Springfield, Illinois: Charles C. Thomas.

Levy, S., Heberman, R., Maluish, A., Schlien, B., and Lipman, M.

- 1985 Prognostic Risk Assessment in Primary Breast Cancer
 by Behavioral and Immunological Parameters. *Health
 Psychology* 4:99-108.

Lifton, R. J. and Olson, E.

- 1976 The Human Meaning of Total Disaster: The Buffalo
 Creek Experience. *Psychiatry* 39:1-18.

Light, I. and Bonacich, E.

- 1988 Immigrant Entrepreneurs: Koreans In Los Angeles,
 1965-1982. Berkeley, California: University of California
 Press.

Lin, K. M.

- 1983 Hwa-byung: A Korean Culture-Bound Syndrome? *American
 Journal of Psychiatry* 140(1):105-107.

Linn, M. W., Linn, B. S., and Jensen, J.

- 1984 Stressful Events, Dysphoric Mood, and Immune
 Responsiveness. *Psychological Reports* 54:219.

Locke, S. E., Kraus L., Lerserman, J. et al.

- 1984 Life Change, Stress, Psychiatric Symptoms and Natural
 Killer Cell Activity. *Psychosomatic Medicine*. 46:441-453.

Logue, J. N., Hansen, H., and Struening, E.

- 1979 Emotional and Physical Distress following Hurricane
 Agnes in Wyoming Valley of Pennsylvania. *Public Health
 Reports* 94:495-502.

- 1981 Some Indications of the Long-Term Health Effects of a
 Natural Disaster. *Public Health Reports* 96:67-79.

Loughrey, G. C., Bell, P., Kee, M., Roddy, R. J., and Curran, P. S.

- 1988 Post-Traumatic Stress Disorder and Civil Violence in
 Northern Ireland. *British Journal of Psychiatry* 153:554-
 560.

Lyons, H. A.

1971 Psychiatric Sequel of the Belfast Riots. *British Journal of Psychiatry* 118:265-273.

MacLean, W. E. Jr., Perrin, J. M., Gortmaker, S., and Pierre, C. B.

1992 Psychological Adjustment of Children with Asthma: Effects of Illness Severity and Recent Stressful Life Events. *Journal of Pediatric Psychology* 17(2):159-171.

Mancini, G., Carbonara, A. O., and Heremans J. F.

1965 Immunochemical Quantification of Antigens by Single Radial Immunodiffusion. *Immunochemistry* 2:235-254.

Markush, R. E. and Favero, R. F.

1974 Epidemiological Assessment of Stressful Life Events, Depressed Mood, and Psychophysiological Symptoms-A Preliminary Report. *In Stressful Life Events: Their Nature and Effects*. Dohrenwend B. S. and Dohrenwend B. P., eds. Pp. 171-190 New York: Wiley.

Marmot, M. G., Syme, S. L., and Kagan, A.

1975 Epidemiologic Studies of Coronary Heart Disease and Stroke in Japanese Men Living in Japan, Hawaii and California: Prevalence of Coronary and Hypertensive Heart Disease and Associated risk Factors. *American Journal of Epidemiology* 102:514-525.

Mason, J. W.

1971 A reevaluation of the Concept of 'Non-Specificity' in Stress Theory. *Journal of Psychiatric Research* 8: 323-333.

Masuda, M., and Holmes, T. H.

1967 The Social Readjustment Rating Scale: A Cross Cultural Study of Japanese and Americans. *Journal of Psychosomatic Research* 11:227-237.

McElory, A.

1990 Biocultural Models in Studies of Human Health and Adaptation. *Medical Anthropology Quarterly* 4(3):243-265.

McKinnon, W., Weise, C. S., Reynolds, C. P., Bowles, C. A., and Baum, A.

1991 Chronic Stress, Leukocyte Subpopulations, and Humoral Response to Latent Viruses. *Health Psychology* 2(3):46-58.

Mechanic, D.

- 1975 Some Problems in the Measurement of Stress and Social Readjustment. *Journal of Human Stress* 1:43-48.

Melick, M. E.

- 1979 Life Change and Illness: Illness Behavior of Males in the Recovery Period of a Natural Disaster. *Journal of Health and Social Behavior* 19:335-42.

Melick, M. E. and Longue, J. N.

- 1985 The Effect of Disaster on the Health and Well Being of Older Women. *International Journal of Aging and Human Development* 21:27-38.

Miller, F. T., Bentz, W. K., Aponte, J. F., and Brogan, D. R.

- 1974 Perception of Life Crisis Events: A Comparative Study of Rural and Urban Samples. *In Stressful Life Events: Their Nature and Effects*. Dohrenwend, B. S. and Dohrenwend, B. P., eds. Pp. 171-190. New York: Wiley.

Murphy, E., Brown, G. W.

- 1980 Life Events, Psychiatric Disturbance and Physical Illness. *British Journal of Psychiatry* 136:326-338.

Nasser, M.

- 1988 Eating Disorders: The Cultural Dimension. *Social Psychiatric Epidemiology* 23:184-187

Newton, R. W., Webster, P. A. C., Binu, P. S., Maskrey, N., and Phillips, A. B.

- 1979 Psychosocial Stress in Pregnancy and its Relation to the Onset of Premature Labor. *British Medical Journal* 2:411-413.

O'leary, A.

- 1990 Stress, Emotion, and Human Immune Function. *Psychological Bulletin* 108(3):363-382.

Palmblad, J., Cantell, K., and Strander, H.

- 1976 Stressor Exposure and Immunological Response in Man Interferon-Producing Capacity and Phagocytosis. *Journal of Psychosomatic Research* 20:193-201.

- Palmblad, J., Pettni, B., Wasserman, J., and Akerstedt, T.
1979 Lymphocyte and Granulocyte Reactions during Sleep Deprivation. *Psychosomatic Medicine* 41:273-280.
- Pardine, P. and Napoli, A.
1983 Physiological Reactivity and Recent Life Stress Experience. *J. Consulting and Clinical Psychology*. 57:467-469.
- Parker, A. Small, W.
1990 Influenza: Pathologogenesis and Host Defense. *Hospital Practice*, November 15:51-62
- Paterson, R. I. and Neufeld, R. W. J.
1989 The Stress Response and Parameters of Stressful Situations. *In Advances in the Investigation of Psychological Stress*. Neufeld, R. W. J., ed. Pp. 7-42. New York: Wiley.
- Paykel, F. S.
1974 Life Stress and Psychiatric Disorder: Applications of the Clinical Approach. *In Stressful Life Events: Their Nature and Effects*. Dohrenwend B. S. and Dohrenwend B. P., eds. Pp. 135-149. New York: Wiley.
- Pennebaker, J. W., Kiecolt-Glaser, J. K., and Glaser, R.
1988 Disclosure of Traumas and Immune Function: Health Implications for Psychotherapy. *Journal of Consulting and Clinical Psychology* 56:239-245.
- Penrose, R. J. J.
1972 Life Events before Subarachnoid Hemorrhage. *Journal of Psychosomatic Research* 16:329-333.
- Portes, A. and Rumbaut, R.
1990 A Foreign World: Immigration, Mental Health, and Acculturation. *In Immigrant America-A Portrait*. Pp. 143-175. Berkeley, California: University of California Press.
- Prince, R.
1960 The Brain Fog Syndrome in Nigerian Students. *Journal of Mental Science* 106:559-570.

- 1964 Indigenous Yoruba Psychiatry in Magic, Faith, and Healing—Studies. *In* Primitive Psychiatry Today. Kiev, A., ed. Pp. 84-120. New York: Free Press.
- 1985 The Concept of Culture-Bound Syndromes: Anorexia Nervosa and Brain-Fag. *Social Science and Medicine* 21(2): 197-203.
- 1989 Review on a Clinical Study of Hwa-byung by Min, SK and Lee, HY. *Transcultural Psychiatric Research Review* 26:137-147.
- Prince, R, and Tchong-Laroche, F
 1987 Culture-Bound Syndromes and International Disease Classifications. *Culture, Medicine, and Psychiatry* 11:3-19.
- Quarantelli, E. L., and Dynes, R. R.
 1970 Property Norms and Looting: Their Patterns in Community Crises. *Pylon* 31(2):168-182.
- Rabkin, J. S. and Streuning, E. L.
 1976 Life events, Stress and Illness. *Science* 194:1013-1020.
- Radloff, L. S.
 1977 The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. *Applied Psychological Measurement* 1:385-401.
- Rahe, E. H., Meyer, M., Smith, M., Kjaer, G. and Holmes, T. H.
 1964 Social Stress and Illness Onset. *Journal of Psychosomatic Research* 8:35-44.
- Rahe, R. H.
 1969 Multi-cultural Correlation of Life Change Scaling: America, Japan, Denmark, and Sweden. *Journal of Psychosomatic Research* 13:191-195.
- 1974 The Pathway between subjects' Recent Life Changes and their Near-Future Illness Reports: Representative Results and Methodological Issues. *In* Stressful Life Events: Their Nature and Effects. Dohrenwend, B. S. and Dohrenwend, B. P., eds. Pp. 73-86. New York: Wiley.

- Rahe, R. H., Lundberg, U., Theorell, T. and Bennett, L. K.
1971 The Social Readjustment Rating Scale: A Comparative Study of Sweden and Americans. *Journal of Psychosomatic Research* 15:241-249.
- Rahe, R. H., McKean, J. D., and Arthur, R. J.
1967 A Longitudinal Study of Life Change and Illness Patterns. *Journal of Psychological Research* 10:355-366.
- Rahe, R. H., and Lind, E.
1971 Psychological Factors and Sudden Cardiac Death: A Pilot Study. *Journal of Psychosomatic Research* 15:19-24.
- Rahe, R.H. and Paasikivi, J.
1971 Psychosocial Factors and Myocardial Infarction. II. An Outpatient Study in Sweden. *Journal of Psychosomatic Research* 15:33-39.
- Rangell, L.
1976 Discussion of the Buffalo Creek Disaster: The Course of Psychic Trauma. *American Journal of Psychiatry* 133(3):313-316.
- Rittenbaugh, C.
1982 Obesity as a Culture-Bound Syndrome. *Culture, Medicine, and Psychiatry* 6:341-361.
- Rosen, R. D., Butler, W. T., Waldman, R. H., et al.
1970 The Protein in Nasal Secretion, *Journal of American Medical Association* 211:1157-1161.
- Rubel, A. J., O'Neill, C. W., and Collado-Ardon, R.
1984 *Susto: A Folk Illness*. Berkeley, California: University of California Press.
- Rubin, R. T, Poland, R. E, Lesser, I. M, Winston, R. A., and Blodgett, A. C. N.
1987 Neuroendocrine Aspects of Primary Endogenous Depression. *Archives of General Psychiatry* 44:328-336.
- Ruch, R. D.
1977 A Multidimensional Analysis of the Concept of Life Change. *Journal of Health and Social Behavior* 18:71-83.

- Russell, D., Peplau, L. A., and Cutrona, C. E.
1980 The Revised UCLA Loneliness Scale: Concurrent and Discriminant Validity Evidence. *Journal of Personality and Social Psychology* 39(3):472-480.
- Sakellans, P. C. and Vernikos-Danellis, J.
1975 Increased Rate of Response of the Pituitaryadrenal System in Rats Adapted to Chronic Stress. *Endocrinology* 97:597-617.
- Schaeffer, M. A. and Baum, A.
1984 Adrenal Cortical Response to Stress at Three Mile Island. *Psychosomatic Medicine* 46(3):227-237.
- Schleifer, S. J., Keller, S. E., Sins, S. G., Davis, K. C., and Stein, M.
1985 Depression and Immunity. *Archives of General Psychiatry* 42:129-143.
- Schleifer, S. J. Keller, S. E., Bond, R. N., Cohen, J., and Stein, M.
1989 Major Depressive Disorder and Immunity. *Archives of Geneneral Psychiatry* 46:81-98.
- Schleifer, S. J., Keller, S. E., Camenno, M. Thornton, J. C., and Stein, M.
1983 Suppression of Lymphocyte Stimulation Following Bereavement. *Journal of American Medical Association* 250:374-389.
- Schmidt, D. D., Zyzanski, S., Ellner, J. Kumar, M. L., and Arno, J.
1985 Stress as a Precipitating Factor in Subjects with Recurrent Herpes Labialis. *Journal of Family and Practice* 20:359-369.
- Selye, H.
1956 *The Stress of Life*. New York: McGraw-Hill.
- Sengars, D. P. S., Waters, B. G. H., Dunne, J. V., and Bover, I. M.
1982 Lymphocyte Subpopulations and Mitogenic Responses of Lymphocytes in Manic-depressive Disorders. *Biological Psychiatry* 17:1017-1031.

- Shore, J. H., Tatum, E. L., and Vollmer, W. M.
1986 Psychiatric Reactions to Disaster: The Mount St. Helens Experience. *American Journal of Psychiatry* 143(5):590-595.
- Silver, P. S., Auerbach, S. M., Vishniavsky, N., and Kaplowitz, L. G.
1986 Psychological Factors in Recurrent Genital Herpes Infection: Stress, Coping Style, Social Support, Emotional Dysfunction, and Symptom Recurrence. *Journal of Psychosomatic Research* 30:163-178.
- Silverman, A. J., Hou-Yu, A., and Kelly, D. D.
1989 Modification of hypothalamic Neurons by Behavioral Stress. *In* *Neuropeptides and Stress*. Tache, Y., Morley, J. E., and Brown, M. R., eds. Pp. 23-38. New York: Springer-Verlag.
- Simmel, G.
1955 *Conflict*. Glencoe, Illinois: The Free Press.
- Simons, R. C. and Hughes, C. C.
1985 The Culture-Bound Syndromes: Folk Illnesses of Psychiatric and Anthropological Interest. Dordrecht, Netherlands: D. Reidel.
- Solomon, Z. and Flum, H.
1988 Life Events, Combat Stress Reaction and Post-Traumatic Stress Disorder. *Social Science and Medicine*. 26(3):319-325.
- Stein, M., Keller, S. E., and Schleifer, S. J.
1985 Stress and Immunomodulation: The Role of Depression and Neuroendocrine Function. *Journal of Immunology* 135:827-841.
- Stone, A. A., Cox, D. D. S., Valdimarsdottir, H., Jandorf, L., and Neale, J. M.
1987 Evidence that Secretory IgA Antibody is Associated with Daily Mood. *Journal of Personality and Social Psychology* 52(2):988-993.
- Stout, C. Morrow, J., Brandt, W. and Wolf S.
1964 Unusually Low Incidence of Death from Myocardial

Infarction: Study of an Italian American Community in Pennsylvania. *Journal of American Medical Association* 188:845-849.

Syme, S. L., Marmot, M. G., Kagan, A., Kato, H., and Rhoads, G.
1975 Epidemiological Studies of Coronary Heart Disease and Stroke in Japanese Men Living in Japan, Hawaii and California. *American Journal of Epidemiology* 102:477-480.

Tanaka-Matsumi, J.
1979 Taijin Kyofusho-Diagnostic and Cultural Issues in Japanese Psychiatry. *Culture, Medicine, and Psychiatry* 3:231-245.

Tennant, C., Bebbington, P., and Hurry, J.
1981 The Role of Life Events in Depressive Illness: Is there a Substantial Causal Relation? *Psychological Medicine* 11:379-389.

Tenovu, J. O.
1989 Human Saliva; Clinical Chemistry and Microbiology Vol. II. Boca Raton, FL: CRC.

Theorell, T.
1974 Life events Before and After the Onset of a premature Myocardial Infarction. In *Stressful Life Events: Their Nature and Effects*. Dohrenwend, B. S. and Dohrenwend, B. P., eds. Pp. 73-86. New York: Wiley.

Theorell, T. and Rahe, R. H.
1971 Psychological Factors and Myocardial Infarction-an Inpatient Study in Sweden. *Journal of Psychosomatic Research* 15:73-88.

Thomas, W. I. and Florian, Z.
1984 The Polish Peasant in Europe and America 1918-1920. Chicago: University of Illinois Press.

Thurlow, H. J.
1971 Illness in Relation to Life Situation and Sick Role Tendency. *Journal of Psychosomatic Research* 15: 73-88.

- Totman, R., Kiff, J., Reed, S. E., Craig, W.
1980 Predicting Experimental Colds in Volunteers from Different Measures of Recent Life Stress. *Journal of Psychosomatic Research* 24:155-163.
- Tyhurst, J. S.
1951 Individual Reactions to Community Disaster. *American Journal of Psychiatry*. 107:764-771.
- Urcin, H., Baade, E., and Levine, S.
1978 *Psychobiology of Stress*. New York: Academic Press.
- Vega, W., Kolody, R., Valle, B., and Hough, R.
1986 Depressive Symptoms and their Correlates among Immigrant Mexican Women in the United States. *Social Science and Medicine* 22(6):645-652.
- Verbrugge, L. M.
1979 Marital Status and Health. *Journal of Marriage and Family* 41:67-82.
- Verbrugge, L. M.
1985 Gender and Health: An Update of Hypotheses and Evidence. *Journal of Health and Social Behavior* 56:156-182.
- Weiner, H.
1989 Overview. *In* *Frontiers of Stress Research*, Weiner, H., Florin, I., Murison, R., and Hellhammer, D., eds. Pp. 405-418. New York: Huber
- Weiss, R. S.
1975 *Marital Separation*. New York: Basic Books.
- Wallace, A. F. C.
1956 Tornado in Worcester: An Exploratory Study of Individual and Community Behavior in an Extreme Situation. Disaster Study No. 3. Washington: National Academy of Science-National Research Council.
- Wolfenstein, M.
1977 *Disaster: A Psychological Essay*. New York: Arno Press.

Worth, R. M., Kato, H., and Rhoades, G. G.

- 1975 Epidemiological Studies of Coronary Heart Disease and Stroke in Japanese Men Living in Japan, Hawaii, and California: Mortality. *American Journal of Epidemiology* 102:481-490.

Yap, P.

- 1951 Mental Diseases Peculiar to Certain Culture: A Survey of Comparative Psychiatry. *Journal of Mental Science* 97:313-327.

Young, M. A.

- 1989 Crime, Violence, and Terrorism. *In Psychosocial Aspects of Disasters*. Gist, R. and Lubin, B., eds. Pp. 140-159. New York: Wiley.

Yu, EY.

- 1977 Koreans in America: An Emerging Ethnic Minority. *Amerasia Journal* 4:1-17.

- 1983 Korean Communities In America: Past, Present, Future. *Amerasia Journal* 10(2):23-51.

Yu, E., Phillips, E., and Yang, E.

- 1982 Koreans in Los Angeles: Prospects and Promises. Los Angeles Center For Korean American and Korean Studies. Berkeley, California: California State University Press.

Yu, K., and Kim, L.

- 1983 The Growth and Development of Korean American Children, in *Psychosocial Development of Minority Children*. Johnson-Powell G., Yamamoto, M. and J. Romero, eds. Pp. 147-158. New York: Brunner and Mazel.

APPENDIX SURVEY QUESTIONNAIRES

Consent Form

Title: Psychoneuroimmunological Impact of the 1992 Los Angeles Riots on the Korean-American Victims

Goals: The goal of this project is to study one aspect of the biocultural adaptation as related to psychosocial (post traumatic) stress among the Korean immigrants in Los Angeles who experienced the stress of the riot in April, 1992. I wish to investigate certain group differences between the study group and the control group who were not directly involved in the riot.

Project: In order to do this, I would like to collect 5ml of your saliva. and look for a hormone indicating stress and a substance (s-IgA) indicating how your immune system is functioning. I would like to learn about your stress, your physical well being, your loneliness. All the saliva and information that is collected through me is strictly confidential. Only an ID number will be used in recording and reporting the saliva analysis and information.

Benefits: The benefit for you will be a better understanding and management of post traumatic stress disorder. The second advantage is to provide scientific evidences of your suffering

resulting from the riot. The third is the possibility of providing social buffering systems for Korean-Americans in Los Angeles.

Risks: There are no physical risks associated with your participation. There will be no money given for participating. You may choose not to answer particular questions in the questionnaires.

" I have read or had read to me and understand the project described above. I agree to participate in the project, and I have received a copy of this consent form."

Date

Participant's printed name

Participant's signature

Investigator, Juna Byun
Graduate student (Ph.D.)
Department of Anthropology
University of Florida
Gainesville, Florida 32611
Tel. 904-392-2031

(ID No. _____)

Background Information

1. Name _____
2. Status: Victims _____ Nonvictims _____
3. Year of Birth _____ 4. Gender _____
5. Phone _____
6. Address _____

7. Nationality _____ 8. Religion _____
9. Residency 1) American citizen ____ 2) Permanent Alien ____
3) Foreigner ____ 4) Others _____
10. Occupation _____
11. How long did you engage in the occupation? _____
12. Marital status 1) Single ____ 2) Divorced ____ 3) Remarried ____
4) Separated ____ 5) Married ____
13. How many children do you have?
1) None ____ 2) 1 ____ 3) 2 ____ 4) 3 ____ 5) 4 or more ____
14. Year of immigration to America? _____
15. Immigrant status 1) 1st generation ____ 2) 2nd generation ____
3) 3rd generation ____ 4) 4th generation ____ 5) Others _____
16. On the average how many alcoholic beverages do you drink in one week?
Note: One mixed drink is equivalent to three 12 oz cans of beer.
1) None (0) ____ 2) One or two (1-2) ____ 3) Three or five (3-5) ____

4.) Six or ten (6-10) ___ 5) More than ten (10-) ___

6) Comments: _____

17. On average how many caffeinated beverages do you drink in one day?

Note: One 12 oz can of soda is equivalent to one cup of coffee.

1) None (0) ___

2) One 12 oz can a day (1) ___

3) Two or three 12 oz cans a day (3-2) ___

4) Four to six 12 oz cans a day (4-6) ___

5) More than six 12 oz cans a day (6-) ___

18. On the average how many cigarettes do you smoke?

1) None ___

2) One pack a week ___

3) Two packs a week ___

4) Three or four packs a week ___

5) Five or six packs a week ___

6) One pack a day ___

19. Are you currently taking any prescribed medications?

Yes ___ No ___

If yes, please list medications: _____

20. What amount of sleep do you get (hrs/day) ? _____

21. What is your weight (kg) ? _____

22. If you are a female, when was your last menstruation period?

___/___/ to ___/___/ 1994

23. What is the duration of your period?

25 days ___ 28 days ___ 30 days ___ 32 days ___ 35 days ___

38 days ___ 40 days ___ 42 days ___ 45 days ___ Others _____

24. What are the strong social buffering systems you have to support you in your living in the United States? (check all that apply)

1) Family __ 2) Church __ 3) School (teachers) __

4) Korean Immigrant Association __ 5) None __

6) Other _____

25. Do you reside in the riot area? Yes __ No __

26. If yes, were you actually damaged by the riot? Yes __ No __

(if yes, what was it? _____

A. Health

- ### B. Work

7. A change in your work condition
- | | | |
|------------------|---------------------------------------|-------|
| Type of change | 1) Loss of job | _____ |
| | 2) Injured on job | _____ |
| | 3) Readjustment on job | _____ |
| | 4) Business destroyed in riot | _____ |
| Troubles at work | 1) With your boss | _____ |
| | 2) With co-workers | _____ |
| | 3) With person under your supervision | _____ |
| | 4) Other () | _____ |

3) Investment and/or credit-
difficulties

14. A loss or damage of personal property

15. A major purchase (stereo, automobile, etc.)

The UCLA Loneliness Scale

Directions: Indicate how often you feel the way described in each of the following statements. Circle one number for each.

Never Rarely Sometimes Often

- | | | | | |
|---|---|---|---|---|
| 1. I feel in tune with the people
around me. | 1 | 2 | 3 | 4 |
| 2. I lack companionship. | 1 | 2 | 3 | 4 |
| 3. There is no one I can turn to. | 1 | 2 | 3 | 4 |
| 4. I do not feel alone. | 1 | 2 | 3 | 4 |
| 5. I feel part of a group of friends. | 1 | 2 | 3 | 4 |
| 6. I have a lot in common with
the people around me. | 1 | 2 | 3 | 4 |
| 7. I am no longer close to anyone. | 1 | 2 | 3 | 4 |
| 8. My interests and ideas are not
shared by others. | 1 | 2 | 3 | 4 |
| 9. I am a outgoing person. | 1 | 2 | 3 | 4 |
| 10. There are people I feel
close to. | 1 | 2 | 3 | 4 |
| 11. I feel left out. | 1 | 2 | 3 | 4 |
| 12. My social relationships are
superficial. | 1 | 2 | 3 | 4 |
| 13. No one really knows me well. | 1 | 2 | 3 | 4 |
| 14. I feel isolated from others. | 1 | 2 | 3 | 4 |

- | | | | | |
|---|---|---|---|---|
| 15. I can find companionship
when I want it. | 1 | 2 | 3 | 4 |
| 16. There are people who really
understand me. | 1 | 2 | 3 | 4 |
| 17. I am unhappy being so
withdrawn. | 1 | 2 | 3 | 4 |
| 18. People are around me but
not with me. | 1 | 2 | 3 | 4 |
| 19. There are people I can talk to. | 1 | 2 | 3 | 4 |
| 20. There are people I can turn to. | 1 | 2 | 3 | 4 |

Center for Epidemiological Studies-Depression
(The CES-D Scale)

Instructions for questions: Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

Rarely or None of the Time (Less than 1 day)	1
Some or a Little of the Time (1-2 Days)	2
Occasionally or a Moderate Amount of Time (3-4 Days)	3
Most or All of the Time (5-7 Days)	4

During the past week:

1. I was bothered by things that usually don't bother me. _____
2. I did not feel like eating; my appetite was poor. _____
3. I felt that I could not shake off the blues even with help
from my family or friends. _____
4. I felt that I was just as good as other people. _____
5. I had trouble keeping my mind on what I was doing. _____
6. I felt depressed. _____
7. I felt that everything I did was an effort. _____
8. I felt hopeful about the future. _____
9. I thought my life had been a failure. _____
10. I felt fearful. _____
11. My sleep was restless. _____
12. I was happy. _____
13. I talked less than usual. _____
14. I felt lonely. _____

- 15. People were unfriendly. _____
- 16. I enjoyed life. _____
- 17. I had crying spells. _____
- 18. I felt sad. _____
- 19. I felt that people disliked me. _____
- 20. I could not get "going." _____

BIOGRAPHICAL SKETCH

Juna Byun was born in Kwang-ju, South Korea, March 11, 1955, as the last child of Gyungyeon Byun and Junghee Auh. She had a personal experience of the Holy Spirit at age 27 and became a Christian. During her early spiritual life she worked for two years to serve the poorest and most oppressed people in Harlem, New York, U.S.A. and Seoul in Korea. She is married to Dr. Youngung Lee (astrophysicist) and is the mother of five-year-old boy, George Lee.

Juna Byun is a graduate of the University of Chonnam National University (B.A. 1976, M.P.H.N. 1978). Before she came to the U.S. to study she served for eight years in the Chonnbuk National University as an assistant professor. While teaching in the university, she published eight articles and two books. She is a graduate of the University of Massachusetts (M.A. 1990). She is a member of the American Anthropological Association and the American Association of Physical Anthropologists. The main emphasis of her education has been in the field of medical anthropology, particularly bio-cultural medical anthropology in conjunction with biomedicine and ethnomedicine. Her current research concerns the application of these disciplines to the field of stress and culture among ethnic minorities such as Asian-Americans and African-Americans in the urban ghetto area and the evolution of stress from the prehistoric to

modern periods. Upon receipt of her Ph.D., Juna Byun hopes that she will continue to work at a university as a professor.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Leslie Sue Lieberman, Chairman
Associate Professor of Anthropology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Thomas A. Brown
Associate Professor of Oral Biology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



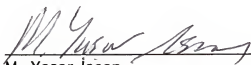
Neil E. Rowland
Professor of Psychology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Anthony Oliver-Smith
Professor of Anthropology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



M. Yaşar İçcan
Professor of Anthropology

This dissertation was submitted to the Graduate Faculty of the Department of Anthropology in the College of Liberal Arts and Sciences and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

April 1994

Dean, Graduate School